2002
Lake County
Comprehensive Stormwater Management Plan

Lake County
Stormwater Management Commission

CDM

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Prepared For:

Lake County
Stormwater Management Commission

Prepared by:

CDM

LAKE COUNTY

STORMWATER MANAGEMENT COMMISSION

The following individuals served on the Lake County Stormwater Management Commission during the development of the Plan and provided valuable information and recommendations. Their assistance is greatly appreciated.

Lake County Stormwater Management Commission - 2002

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Steven Harris, Mayor Village of Deerfield	Vernon Swanson
Thomas Skinner, President Village of Lake Bluff	William Hart
Lane Harrison, Mayor City of Zion	Howard Bennett
Jim Krischke, President Village of Lake Zurich	Craig Taylor

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Special acknowledgement is provided to Ward Miller, Executive Director of the SMC, who served as the **Project Manager** for the preparation of the Comprehensive Plan.

acknowledgements

The following individuals served on the Stormwater Advisory Committee. Their input and direction was critical for the success of this Plan. Their assistance is greatly appreciated.

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The following individuals served as staff for the Lake County Stormwater Management Commission during the development of the Plan. Their experience and insight aided in the compilation of this plan and their assistance is also greatly appreciated.

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This Plan was prepared by CDM under the direction of the Lake County SMC. The assistance of CDM is appreciated and acknowledged.

Tables

FIGURES

Executive Summary Comprehensive Stormwater Management Plan - 2002

Background and Need for Update

In 1990, the Lake County Stormwater Management Planning Committee completed the Comprehensive Stormwater Management Plan. The Comprehensive Plan served as the initial guidance and framework for the Stormwater Management Commission (SMC) to develop and implement its stormwater management program for the past twelve years. Since then, significant changes have occurred in funding, regulations, county growth, and increased environmental awareness, prompting the Commission to develop this Comprehensive Plan Update by revisiting SMC's stormwater management mission and role in Lake County.

Update Development Process

Development of the Comprehensive Plan Update utilized an interactive process with a Stormwater Advisory Committee (SAC) comprised of 15 members representing the perspectives of local and regional government, environmental concerns, the engineering and development communities, and other special interests. The SAC worked jointly with SMC staff and its consultant Camp Dresser & McKee to define SMC's mission and direction for the new millennium. These joint efforts produced this new Comprehensive Plan to be used by the Commission and staff to guide SMC's mission and its ten-year actions.

SMC Mission

The mission for SMC is a continuation of its 1994 interim mission to:

Provide desired community services toward the primary goal of flood damage reduction and surface water quality improvement.

The Comprehensive Plan describes SMC's mission and presents five primary objectives and nearly 25 policies and basic stormwater principles as a framework for SMC's stormwater management functions and activities.

SMC Existing Stormwater Management Program

The Comprehensive Plan includes a detailed breakdown of services into seven functional areas and a number of supporting activities that comprise its stormwater management program. The FY 2001 budget was utilized as the baseline condition for defining budget allocations and costs. SMC's 2001 internal budget, excluding county capital improvement money (CIP), was $2,281,000. The total budget for 2001 with county CIP and grant monies was $5,596,000.

Lake County Stormwater Needs and Future Stormwater Management Program

Countywide stormwater management needs were developed based on input from SMC staff, a survey mailing, and the SAC. This needs assessment identified "gaps" in current services and provided guidance for the development of a future stormwater management program. The future program was formulated to be "full service" and to meet countywide needs. Development of the future full service program included definition of SMC's roles and responsibilities for stormwater management along with those of other organizations and identified a number of services that should be enhanced or expanded to meet these needs.

Future Stormwater Management Program Costs

Costs were developed to address the existing and future countywide stormwater management needs consistent with SMC's mission and its five primary objectives. Meeting these stormwater management

needs requires an expanded program that provides a higher level of service across the entire county. The average annual cost to address countywide needs was estimated to be $44 million. With the exception of engineering services provided by local municipalities, the $44 million represents the cost of providing countywide stormwater management services by all jurisdictions in the county, including SMC. A significant portion of this cost (40%, or $18 million) is for operation and maintenance of the stormwater system at the local level. These operation and maintenance responsibilities lie with the local municipalities or other responsible jurisdictions, and remain their responsibilities. Currently, these operation, management and maintenance needs are either partially funded by local governments or may go unmet. The future full service SMC stormwater management program only includes maintenance of interjurisdictional facilities that may be outside the responsibility of local communities. Subtraction of the local operation and maintenance requirements reduces the expanded SMC-only stormwater program annual costs to $26 million. However, SMC will continue to seek additional funding opportunities that could support local maintenance efforts.

SMC's existing and enhanced services to address countywide stormwater management needs (excluding local maintenance) comprise the full service SMC stormwater management program. For a ten-year implementation plan, the full service program would cost $26 million per year. A comparison of other similar stormwater programs and an assessment of the current economic realities facing the county reduced this full service budget to a more appropriate target budget of **$15 million** for SMC. The resulting budget provides a more modest, yet expanded service level for SMC to do its part to achieve its mission and its program objectives. The envisioned service expansion does not include the expansion of SMC's regulatory authorities. Additional fee-based regulatory personnel may be needed to implement our current regulatory authorities if (a) more inspections and follow-ups are warranted for effective Ordinance enforcement or (b) the volume and pace of development proposals increase. Other jurisdictions have their own stormwater management responsibilities and must fulfill their roles in meeting future countywide stormwater needs.

A **$15 million** program cannot be supported by the current property tax levy and tax cap. This expanded level of service requires a dedicated primary funding mechanism to achieve the required program funding. (See Appendix D for a summary of funding alternatives).

Action Plan Development

With consideration of factors such as timing and sequencing, priorities, cost, and political and public expectations, an Action Plan was developed for a ten-year planning period. The Action Plan, presented in Table ES-1, identifies the specific services and initiatives, and their time-frame. The Action Plan begins in Year 1 with a budget expenditure of approximately $5 million, ramping up to an expenditure of approximately $15 million per year in Year 5.

Implementation

Several critical steps must be implemented for the future stormwater management program to be successful. The most critical of these is securing enabling legislation, if needed, for a dedicated primary funding mechanism. While SMC has been successful in leveraging federal and state grants, this is an unpredictable and unreliable funding mechanism for the basis of an ongoing services program. The Action Plan is based on an expansion of services to meet countywide stormwater management needs, and is founded on a program funding level of approximately $15 million for SMC, provided through implementation of dedicated primary funding mechanism. If the implementation of an alternative dedicated funding mechanism is delayed, the Comprehensive Plan provides SMC

with activity and cost building blocks (increments by which to expand the program) to continue its stormwater management services within the current funding framework.

The basic steps for implementation of the Comprehensive Plan are:

1. Acceptance of the Comprehensive Plan 2002 by the Commission;

2. Facilitation of a workshop with local jurisdictions to further define roles and responsibilities for stormwater management;

3. Passage of the dedicated funding enabling legislation, if needed, and implementation of the dedicated funding mechanism; and,

4. Preparation of detailed annual plans (with or without alternative funding) for continuing implementation of the countywide services and initiatives.

Partnership

SMC approaches all that it does with an awareness to the roles, responsibilities and capabilities of other governmental jurisdictions and agencies in the county. SMC works collaboratively with other jurisdictions, agencies and affected stakeholders to implement stormwater management objectives in Lake County. This "Partnership Approach" maximizes the allocation of resources and expertise in the county and ensures consensus among stakeholders.

1 Administration

Functions and Activities	Fiscal Year 1	Fiscal Years 2 to 5	Fiscal Years 6 to 10
Various Administrative Services	Continue with administrative support services	Continue	Continue
User Fee	Participate with other counties and associations in the pursuit of enabling legislation	Provide equivalent full time staff member to administer user fee program when enabling legislation is obtained.	Continue

2 Planning Services

Functions and Activities	Fiscal Year 1	Fiscal Years 2 to 5	Fiscal Years 6 to 10
Watershed Planning	Initiate enhanced watershed planning (3 new plans)	Conduct 4 watershed plans per year, completing by end of Year 5	Continue watershed planning to keep plans up to date
Regional Planning and Institutional Planning	Continue regional and institutional planning at existing levels	Continue	Continue
Flood Damage Reduction Project Planning		Initiate flood damage reduction planning in support of capital improvements as ongoing effort through Year 10	Continue
Water Quality Project Planning	Continue water quality planning and prepare a Water Quality Improvement Strategy	Conduct water quality planning at enhanced level in support of ongoing capital improvements as ongoing effort through Year 10	Continue
Wetland Project Planning	Develop wetland preservation plan and identify banking opportunities	Continue wetland planning as opportunities arise on ongoing projects.	Continue
Restoration and Rehabilitative Project Planning		Complete Restoration and Rehabilitation Plan in Year 3; Initiate planning in support of restoration and rehabilitation maintenance projects in Year 4	Continue

3 Engineering Services

Functions and Activities	Fiscal Year 1	Fiscal Years 2 to 5	Fiscal Years 6 to 10
Non-Regulatory Technical Assistance	Continue non-regulatory technical assistance	Continue	Continue
Rain Gauge/Stream Network	Add 5 additional rain gauges to network	Add 5 more additional rain gauges to network, bringing total to 19	Continue to operate rain gauge network
Emergency Action Planning, Response and Recovery	Develop the Flood Annex to the Lake County Emergency Operations and Preparedness Plan; Organize a Flood Hazard Task Force	Conduct Emergency Action Planning Workshop in Year 2; Evaluate the feasibility of an early warning system in Year 2; Prepare technical guidance to support flood recovery efforts by communities in Year 3	Continue facilitation of Task Force and conducting Emergency Action Planning Workshops on annual basis
GIS Data Collection and Information Distribution	Continue current GIS services	Prepare internal GIS Needs Assessment; Begin enhanced effort to incorporate appropriate data and information into GIS; Continue GIS data entry; Develop agreement with Lake County Planning to distribute stormwater-related GIS information and data; Provide GIS information and data to users	Continue enhanced level of GIS service
Floodplain Mapping/Management	Initiate efforts to become FEMA CTP and assume responsibility for maintaining regulatory floodplain maps for Lake County	Prepare regulatory Floodplain maps including depressional floodplains; Begin review of FEMA submittals, floodplain mapping responsibilities and continue annually	Continue expanded floodplain review and mapping services
Wetland Delineation	Offer wetlands delineations for small private property owners	Continue	Continue
NPDES Phase II	Prepare guidance document for runoff control and public involvement and education to be used by all communities in the county; Develop specific technical guidance for illicit discharge program and pollution prevention and good housekeeping program; Provide significant support to local jurisdictions as Local Qualifying Program	Assist local communities in their Public Involvement and Education Programs through SMC's Public Information functions and activities	Continue
CIRS	Continue CIRS program.	Continue and expand as needed based on future growth. Develop GIS-based tracking system	Continue
Drainage Problem Resolution	Continue parcel drainage problem resolution assistance where local communities do not have adequate expertise; Continue problem resolution for interjurisdictional problems and WDO violations; Continue resolution of subwatershed/regional problems.	Continue	Continue

4 Regulatory

Functions and Activities	Fiscal Year 1	Fiscal Years 2 to 5	Fiscal Years 6 to 10
Permit processing, inspection services, enforcement, regulatory technical assistance and WDO and TRM updates	Continue these services at the present level of service (this now includes isolated wetland responsibilities); Continue to provide jurisdictional determinations of wetlands. Continue to develop web-based documents such as WDO and TRM	Expand regulatory support services to meet demands from continued growth in Lake County; Develop toobox for Enforcement Officers	Continue
Wetland Permitting Authority	Continue expanded isolated wetlands and jurisdictional determination program	Continue	Continue

5 Public Information

Functions and Activities	Fiscal Year 1	Fiscal Years 2 to 5	Fiscal Years 6 to 10
General Public Information	Enhance public information program for NPDES program and other needs	Provide assistance to local communities in Year 2 in complying with NPDES program; Continue assistance throughout permit term	Continue
Technical Training	Enhance technical training and target specific audiences	Implement enhanced technical training	Continue
Public Input	Enhance public involvement program to facilitate NPDES requirements	Track and monitor SMC and local public involvement programs for compliance with NPDES requirements	Continue

6 Maintenance

Functions and Activities	Fiscal Year 1	Fiscal Years 2 to 5	Fiscal Years 6 to 10
Restoration and Rehabilitative Projects	See Planning Function for R & R Plan development	Planning and design for R & R projects begins in Year 2 and Year 3; Continue R & R projects annually in accordance with budget	Initial construction of R & R projects in Year 6
Maintenance Program Management	No change in first year	Develop countywide maintenance program in Year 5; Prepare Maintenance Manual of Practices in Year 5	Provide staff support to manage the maintenance program for SMC
Regional and Local Maintenance	No change in first year	Begin first year of maintenance in Year 5; Maintenance allocation will enable SMC to do trunk system and interjurisdictional maintenance; Explore possibilities for additional funding and maintenance assistance to local jurisdictions	Continue annual maintenance at level established in budget
Flood Control Facility Operation	No flood control facilities to operate at this time	No flood control facilities to operate at this time	No flood control facilities to operate at this time

7 Capital Improvement

Functions and Activities	Fiscal Year 1	Fiscal Years 2 to 5	Fiscal Years 6 to 10
Design	Continue current design efforts	Initiate design services for additional capital improvements in Year 2; Expand design services as a percentage of capital construction	Continue expanded design services
Construction Services	No planned major construction until Year 3.	Expand construction services in support of construction in Year 3	Continue ongoing construction services in support of construction through Year 10
Construction	No planned major construction until Year 3.	Expand capital improvements construction in Year 3	Continue expanded capital program at $7 million per year

Section 1 Plan Development Background

1.1 Introduction

In 1990, the Lake County Stormwater Management Planning Committee completed the Lake County Comprehensive Stormwater Management Plan. Since then, the Comprehensive Plan has served the Stormwater Management Commission (SMC) well by providing the initial framework and guidance for SMC to carry out its mission for stormwater management across the county. However, as the county has grown and SMC has evolved, it is appropriate to review the original vision and determine whether any modifications are necessary to deal with growth, financial realities and the ever-changing regulations, technology, and political and public expectations. Appendix A of this plan is an administrative supplement that lists the powers and authorities of SMC as they were conveyed by county ordinance and are incorporated as if fully written herein. The Goals and Objectives of the 1990 Comprehensive Plan are still relevant today and are also incorporated into this plan by reference (See Appendix B).

The 1990 Comprehensive Plan created the initial SMC organizational model and budget through a preliminary cost of service analysis. The initial budget was based on a number of assumptions regarding staffing, activities, responsibilities and watershed expenditures. With the growth of the county and the further definition and evolution of SMC's roles, many of these assumptions are no longer valid and must be updated. SMC currently carries out a number of activities that were never envisioned in the 1990 Plan. Therefore, one of the primary objectives of updating the Comprehensive Plan must be to review and redefine, if necessary, SMC's role and responsibilities for stormwater management. The Comprehensive Plan must also consider SMC's overall mission and objectives relative to the services it provides and the needs of the county.

The Stormwater User Fee Study completed in early 2000, indicated that significant additional revenue was necessary for SMC to function at a level comparable to similar stormwater management programs. It recommended that a more detailed cost of service study be completed as one of the first steps in continuing to move toward implementation of a stormwater dedicated primary revenue source for SMC's program. The Comprehensive Plan 2002 includes a cost of service study component that is intended to provide a definition of the stormwater management services SMC should be providing as well as reasonable estimates of their costs. This component of the Comprehensive Plan 2002 resulted in an "action plan" to guide SMC into the 21st century.

1.2 Organization of the Comprehensive Plan Update

This update of the Comprehensive Plan is presented in six sections that were developed jointly with SMC staff and input from the SAC. The purpose of the update is to review SMC's mission, roles and responsibilities, and to establish a framework and action plan to guide it over the next ten years.

Section 1 of the Comprehensive Plan 2002 presents pertinent background on the update process and summarizes the goals and mission of SMC, its primary objectives and a number of policies to guide SMC in carrying out its mission.

Section 2 summarizes the existing SMC

stormwater management program based on its history of operation in its first ten years. This includes descriptions of the existing SMC organization, its functions and activities, and its budget allocations.

Section 3 presents the countywide stormwater management needs that were identified through a countywide survey, with input from the SAC and from SMC's experience during the past ten years.

Section 4 presents the future stormwater management program description and defines SMC's future roles and responsibilities relative to stormwater management in Lake County in terms of its functional service areas of planning, engineering, regulatory, public information, maintenance and capital improvements.

Section 5 presents the estimated costs for the future stormwater management program to meet countywide needs. The affordability of the future countywide program is assessed and recommendations for SMC's future stormwater management program are summarized.

Section 6 presents a ten-year action plan and identifies the major steps necessary for implementation of the recommended program to achieve SMC's overall mission.

1.3 Changes Since Development of the 1990 Plan

The differences between the assumptions that were used to develop the 1990 Comprehensive Plan, the actual operation of SMC, the issues it currently faces, and the issues it will face in the future are significant. For example, environmental awareness is at a new high. The public now demands restoration of stormwater drainageways and wetlands to convert them back into more naturalized states. A referendum was recently passed that included sponsorship for the restoration of wetlands in Lake County. The EPA is implementing new water quality-focused actions that impact each community in the county. These differences have already changed the way SMC serves its constituents in Lake County and will continue to chart a new path for SMC.

Updating the mission of SMC to be consistent with these changes in need and expectations will produce a number of policy questions that cannot be answered at the staff level because they involve major issues such as level of service, responsibility and cost. These issues may impact the county, individual municipalities and other governmental jurisdictions and the general public. The answers to these policy questions must be developed at the Commission level through an interactive process with input from these other stakeholders with a role in countywide stormwater management.

1.4 Stormwater Advisory Committee Input and Direction

A Stormwater Advisory Committee (SAC) was formed to provide this critical input and met five times to discuss various policy issues regarding the mission, role and responsibilities of SMC. The SAC was comprised of 15 members representing local and regional government, the environmental and development communities, special interests and the public. SAC members included:

Name	Representation
Carol Spielman	SMC Commission and Lake County Board
Barbara Little	Municipal Representative
Tom Price, P.E.	Technical Advisory Committee - Environmental
Gary Schaefer, P.E.	Technical Advisory Committee - Development Consultant
Jim Cunningham	Watershed Management Board - Drainage District
Julie Morrison	Watershed Management Board - Township
Jim Schultz	Lake County Emergency

	Management Agency
Phil Rovang	Lake County Planning Department
Dennis Dreher	Regional Planner
Bob Silhan, AICP	Village Planner
John Moore, P.E.	Municipal Engineer
Jim Schneider	Homebuilders Association of Lake County
Dianne Turnball	Environmental Private Non-Profit Association
Sarah Nerenberg	General Public - Representing Flood Victims
Tori Trauscht	General Public - Watershed Planning Committee

The SAC served as a sounding board for reviewing SMC's overall mission and defining its role in stormwater management in Lake County. These efforts served as the starting point for the development of this Comprehensive Plan Update and focused on the following objectives:

- Redefine the vision and role of SMC, if necessary,
- Establish and prioritize SMC's future stormwater management program activities and responsibilities,
- Project the costs of carrying out SMC's future program, and
- Develop an action plan that presents SMC's stormwater program activities, timelines and costs for the next ten years.

1.5 Authority

SMC's authority for stormwater management for Lake County and this Comprehensive Plan Update is provided in 55 ILCS 5/5-1062. This state level enabling legislation was enacted in response to the major flooding that occurred in October 1986 and August 1987 that caused widespread damages and dislocations across northeastern Illinois. Lake County established the Lake County Stormwater Management Planning Committee in December 1987; a municipal/county partnership made up of six municipal members and six County Board members. In response to the enabling legislation at the state and county level, Lake County developed and adopted the original Comprehensive Plan in June 1990.

SMC's authority for stormwater management enables it to:

- Enact and implement a countywide stormwater management plan
- Prescribe and enforce rules and regulations for watershed management and control of stormwater runoff
- Levy up to a 0.20% annual tax to implement the stormwater management plan

1.6 The Mission of SMC

The 1990 Comprehensive Plan focused on a strategy for the initial implementation of a comprehensive stormwater management program for Lake County. This focus required an initial definition of roles and responsibilities for SMC and formation of an institutional framework for managing stormwater across the county. In 1990, the mission of SMC was defined as follows:
To provide and maintain a system of stormwater conveyances and controls which protects the lives and property of Lake County residents, recognizes the unique requirements of the individual watersheds, and complies with state and federal requirements.

The elements of the mission in the 1990 Plan are to:

- *Develop consistent and effective county-wide regulations to ensure stormwater problems will not increase;*
- *Protect the quality of Lake County's water resources;*
- *Provide a vehicle for coordinating all jurisdictions in and adjacent to Lake County with an emphasis on managing*

stormwater on a watershed basis;
- *Create detailed drainage basin plans to solve existing problems and guide future development;*
- *Provide accurate technical information and guidance;*
- *Develop a consistent and equitable funding mechanism;*
- *Improve the maintenance of the drainage system; and*
- *Provide an ongoing education program.*

This mission provided an initial clear direction for SMC and the original implementation of the county's stormwater management program in the late 1980's. However, the continued county growth and the natural evolution of SMC's program combined with changes in state and federal regulations set the stage for a slightly modified direction for SMC. In addition, the tax cap imposed in 1991 froze SMC's stormwater management program at its "embryonic" stage, significantly limiting its ability to fully implement the 1990 Plan. In 1994, SMC adopted a more concise and focused interim mission to:

Provide desired community services toward the primary goals of flood damage reduction and surface water quality improvement.

Although similar to its original mission, this interim mission emphasized the importance of the role of water quality in stormwater management, from not only a regulatory perspective, but also due to an increased awareness by the general public. Although constrained by funding limitations, SMC has achieved significant accomplishments for both flood damage reduction and water quality improvement.

Through discussions with the SAC and Commission, the current mission of SMC remains unchanged from the 1994 interim mission; SMC's goals shall be to achieve flood damage reduction and surface water quality improvement.

However, in carrying out its mission, SMC must also implement and achieve a number of objectives to achieve these goals and must establish and implement a number of policies to support the reduction of flood damages and the improvement of surface water quality.

1.7 Stormwater Management Plan Objectives

The SAC met a number of times over the course of this project to discuss and define the roles and responsibilities of SMC for stormwater management in Lake County. This process defined objectives that are cornerstones of SMC's overall mission. These objectives mirror the objectives of 1990 Plan. The objectives are:

- Mitigate existing flood damages and prevent the occurrence of new damages in the future
- Repair, restore, maintain and preserve natural and constructed drainage features and facilities in the county
- Improve surface water quality
- Promote awareness and understanding of stormwater management issues
- Establish, maintain and distribute stormwater management data and information

1.8 Stormwater Management Policies

The stormwater management plan objectives can only be carried out if the appropriate policies and standards are in place. A number of these have previously been implemented by SMC. The previous actions and policies utilized by SMC over the past ten years provided an excellent starting point for determining its future direction. The following stormwater management policies were created through discussions to define SMC's role and responsibilities for stormwater management in the county.

1.8.1 Philosophy and Basic Principles

- Utilize and preserve natural water resource features such as wetlands and existing storage areas to maintain their natural flood control, stormwater management, water quality and environmental benefits.
- Coordinate actions with municipalities and local county agencies and adjacent counties to ensure efficient implementation of the stormwater management program.
- Cooperate with others in the pursuit of additional funding sources and funding mechanisms to meet the expanded service needs of SMC.
- Define roles and responsibilities for stormwater management among all involved jurisdictions across the county. Work interactively with "partners "in stormwater management throughout the county.
- Integrate multi-objective opportunities such as environmental enhancement and recreation into flood damage and water quality management projects.

1.8.2 Services

- Provide direct technical services to local governments, agencies and other groups to focus SMC's limited resources most effectively to address regional, watershed and interjurisdictional problems.
- Maintain a high level of technical expertise and local knowledge "in-house", in order to provide "consultant-level" technical assistance to SMC's customers.
- Take lead responsibility for preparation of watershed plans to comprehensively address existing flooding problems and to efficiently and effectively manage stormwater quality and quantity in the future.
- Provide direct services to individuals regarding wetland protection and enhancement.
- Conduct, contract for, or provide funding for rehabilitation, restoration and maintenance of constructed and natural stormwater management facilities or drainageways.
- Sponsor non-structural flood mitigation measures (such as acquisitions)
- Construct multi-purpose and environmentally friendly structural flood control projects and acquire natural drainageway and detention areas.
- Provide emergency response services and flood mitigation planning.

1.8.3 Public Education and Involvement

- Provide citizens and groups with public information, education and training opportunities regarding stormwater management to raise awareness and capabilities throughout the county.
- Utilize a partnering approach to collaboratively work with all affected stakeholders to implement SMC's goals.
- Actively facilitate local community input into local, federal and state sponsored stormwater management activities in Lake County.
- Maintain a formal staff position to implement the public education and information component of the stormwater management program.

1.8.4 Regulatory

- Ensure that all new development does not add to existing problems or create new ones by working closely with municipal officials and developers.
- Provide adequate resources to implement and enforce compliance with the WDO.
- Develop and maintain appropriate WDO and technical guidance to facilitate comprehensive stormwater management.

1.8.5 Information and GIS

- Work cooperatively with the Lake County Management Services Department and other agencies to maintain and distribute stormwater management data.
- Develop new topographic data and updated hydrologic and hydraulic models for use in watershed planning and overall stormwater management.
- Develop and make available floodplain and depressional storage mapping and parcel-specific wetland and floodplain map information.

Section 2
Existing Stormwater Management Program and Services

The Lake County Stormwater Management Commission (SMC) staff has been in operation for ten years. Over this time, the stormwater management program has evolved and expanded to meet local needs and changing regulatory requirements. Services provided by the agency in 2001 greatly surpass those provided ten years ago. However, due to limited funding, the agency has not yet attained a number of the goals established in the 1990 Lake County Comprehensive Stormwater Management Plan. This section defines the current stormwater program and services, details the costs and revenue sources for the existing program, and provides a comparison of the existing program to that which was envisioned in the 1990 Lake County Comprehensive Stormwater Management Plan.

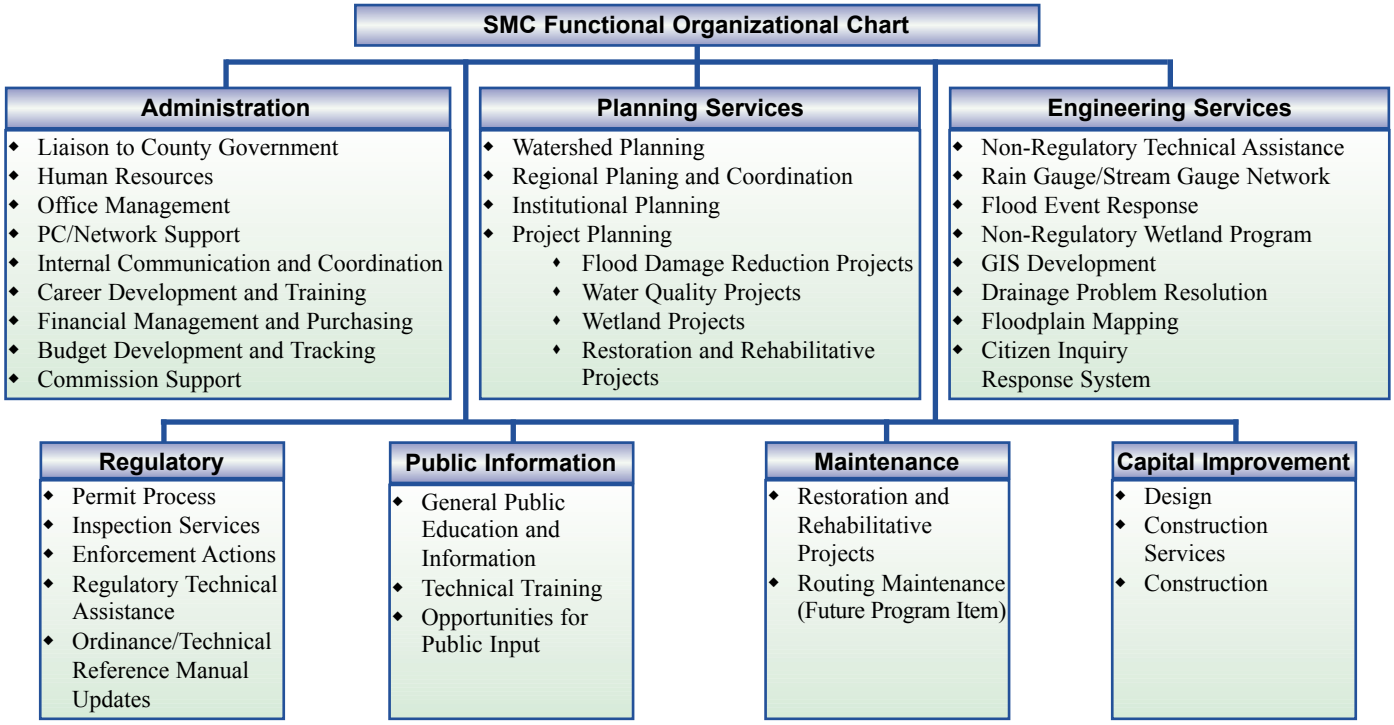
2.1 Current Stormwater Program and Services

A system of functional responsibilities was developed to define the current stormwater program and services. The functional responsibilities from the 1990 Lake County Comprehensive Stormwater Management Plan were used as a starting point and additional responsibilities were added to include all current services. The current stormwater program was defined using seven "major" functional responsibilities:

- Administration
- Planning Services
- Engineering Services
- Regulatory
- Public Information
- Maintenance
- Capital Improvement

These functional responsibilities were further divided into 34 sub-categories, which collectively define the current stormwater management program (Figure 2-1). Each major functional responsibility is described in detail below.

Figure 2-1: SMC Functional Organization Chart



2.1.1 Administration

Administration includes all internal activities that are necessary to run, maintain and manage the organization, its staff and the physical office. External coordination with county government and support of the Commission Board are also included in this category. In addition, career development and training of staff has been categorized as an administrative function. The following sub-categories define the administrative functions of SMC:

- Liaison to County Government, other peer agencies
- Human Resources
- Office Management
- Internal Communication and Coordination
- Career Development and Training
- Financial Management and Purchasing
- Budget Development and Tracking
- Commission Support

2.1.2 Planning Services

Planning services cover a range of activities from traditional watershed and project planning to the planning and direction of the SMC stormwater management program. Preparation of grant applications is an integral part of stormwater planning in Lake County. Some preliminary planning efforts may be conducted directly in support of grant applications. SMC has been successful in leveraging grant monies, which have funded the majority of capital improvements in the county and also a significant portion of ongoing planning efforts.

SMC's planning services are divided into the following categories:

- Watershed Planning
- Regional Planning and Coordination
- Institutional Planning
- Project Planning

2.1.2.1 Watershed Planning

Watershed planning involves conducting studies to identify water quality, flooding and natural resources issues that must be addressed. Existing problems and deficiencies are documented and potential future impacts are identified. An important component of watershed planning is organizing and leading a watershed planning committee composed of citizens, elected officials, homeowner associations, and regional, state and federal agencies. A watershed management plan is developed to address existing and future problems that are proactively identified by the planning effort. The goal of the watershed planning effort is to develop multi-objective watershed improvement projects and programs that have the consensus of the stakeholders and can be implemented.

Lake County Watershed Plans are typically composed of various components, which are coordinated through SMC and consultants. A typical watershed plan will develop a watershed Stakeholder Planning Committee and through this committee, goals and objectives for the watershed will be developed. The plan will also collect and analyze various types of data, such as topographic information, soil characteristics, land use, flood damage data and maps, etc., to inventory and analyze watershed resources, conditions, problems and opportunities. Updated floodplain maps will be prepared based on the results of a hydrologic and hydraulic study. A watershed plan will also adapt and revise the applicable watershed management and restoration techniques "toolbox" developed for each of Lake County's major watersheds. A prioritized Action Plan is a key component that includes stakeholder roles and responsibilities, programmatic action items and site-specific action recommendations.

Lake County is divided into four major watersheds: Lake Michigan, North Branch of the Chicago River, Des Plaines River and Fox River. These four are further divided into 26 smaller subwatersheds. A major watershed planning

effort for the North Branch Chicago River was completed in fall 2000 by SMC. This was the first watershed management plan to be adopted by SMC. Participation in the multi-county Des Plaines River Watershed Plan will be ongoing. Additional watershed planning efforts have focused on several subwatersheds with major efforts for Sequoit Creek and Squaw Creek. Watershed or subwatershed plans that are currently underway include:

- Des Plaines River Watershed Management Plan (Kenosha, Lake, Cook Counties)
- Sequoit Creek and Little Silver Lake Watershed Management Plans
- Squaw Creek Watershed Management Plan
- Fish Lake Drain Watershed Management Plan
- Kellogg Creek/Dead River (Bull Creek) Watershed Management Plan
- Indian Creek Watershed Implementation Plan

Plans that are completed include:

- Water Quality Plans for Flint Creek, Mutton Creek, Third Lake and Lake Michigan Subwatersheds/Watershed
- Comprehensive Plan for the North Branch Chicago River

Watershed planning also encompasses the generation of data for use in planning. These projects have a countywide scope and will be highly useful for subsequent watershed planning. Ongoing or recently completed projects that support watershed planning efforts include:

- GIS system development
- Stream inventories for 10 subwatersheds

2.1.2.2 Regional Planning

Regional planning involves coordination of SMC's programs and services with regional agencies and with surrounding communities and watersheds. Stormwater management programs in Lake County are dependent on upstream conditions and may also affect downstream communities. Large scale programs involve extensive coordination with the stakeholders inside and outside of Lake County.

The major regional planning effort at this time is SMC's participation in the Des Plaines River watershed management plan. In addition, SMC is participating in several other regional initiatives including:

- Strategic Plan for Water Resources Management
- Regional Growth Strategy
- Illinois River 2020 Integrated Watershed Management Plan
- Regional Planning Commission
- IEPA's Watershed Committee

2.1.2.3 Institutional Planning

Institutional planning is needed to guide the program and services of SMC. Changing political, organizational and regulatory frameworks require the ongoing management and integration of SMC in the County and State. Regulatory programs must be developed such that they are consistent with the programs and services of other agencies that may also have jurisdiction within Lake County. Institutional planning covers staffing decisions, internal organization, pursuit and tracking of revenue sources, and issues that will affect the future role and programs of SMC.

SMC currently prepares an annual work program. This program identifies the major tasks that will be assigned to each staff position over the course of the year. If enacted, a dedicated funding system would provide an additional revenue source to increase the level of service provided by SMC (the recommendations in this Plan are based on the assumption that revenues from an enhanced revenue source will become available by Year 3). Planning for the future impact of the National Pollutant Discharge

Elimination System (NPDES) Phase II General Permit has been initiated. Planning for the implementation of a Wetland Program was initiated in 2001. The Comprehensive Plan 2002 and evaluating plan implementation, which will further define SMC's role and examine important policy issues, are also important parts of institutional planning.

2.1.2.4 Project Planning

Project planning includes planning and analysis to evaluate alternatives and develop solutions to address problems related to flood damage reduction, water quality, wetlands, restoration and rehabilitative projects. Many of these projects are the implementation of watershed planning recommendations. Planning may be conducted by SMC or may be supported by SMC through watershed management board (WMB) funds or technical assistance. Most project planning is directly related to an existing problem or need and is intended to lead to the implementation of a project. Scoping studies may be designed to identify problem areas in need of solutions and may overlap with watershed planning activities. Project planning also includes preparing applications for grants that could fund projects.

Project planning includes the following examples of activities:

- Lake County Flood Hazard Mitigation Plan
- Repetitive Loss Property Flood Audits and Plan
- Site specific flood mitigation plans
- Des Plaines River Watershed Wetland Restoration Study
- Wetland Mitigation Bank Study
- Preparation of annual Capital Improvement Projects proposal
- Preparation of Grant applications for project funding
- Administration of the Watershed Management Board Program

2.1.3 Engineering Services

Engineering services include functions that are non-regulatory and associated with activities other than project planning and design. SMC provides significant technical assistance to other agencies and organizations. This includes the review and comment on other agencies' draft products. SMC operates a system of nine rain gauges throughout Lake County. Rain gauge data is available over the SMC web site http://www.co.lake.il.us/smc/. SMC also cooperates with the United States Geological Survey (USGS) for operation of stream gauges in Lake County. SMC develops and maintains stormwater related GIS data. Under the new wetland program, SMC provides jurisdictional wetland determinations and wetland delineations for private small property owners. SMC provides assistance in resolving drainage problems when the problem is interjurisdictional or on a regional scale.

SMC implemented the Citizen Inquiry Response System (CIRS) in the early 1990's to provide an effective procedure to record and track progress or resolution of drainage problems and complaints. The CIRS program documents observed or reported drainage and flooding problems and citizen complaints. Problems that reoccur or are not readily resolved are compiled for future action in updating the countywide Flood Hazard Mitigation Plan. The CIRS program has proved to be a valuable tool for directly responding to the needs of local citizens or referrals for resolution of their drainage problems.

Engineering Services includes the following ongoing activities:

- Technical assistance to other agencies and organizations
- Technical assistance to individual property owners under the CIRS program
- Drainage problem resolution
- Operation of rain gauge network
- Flood event response
- Development and maintenance of stormwater related GIS data
- Jurisdictional wetland determinations and wetland delineations

2.1.4 Regulatory

The regulatory function involves the development and enforcement of regulations to control impacts to water quality, flooding and natural resources. The development and implementation of the Watershed Development Ordinance (WDO) in June 1992 was one of the first major accomplishments of SMC. The WDO is an amendment to this Comprehensive Plan. The WDO will be reaffirmed by the adoption of this Comprehensive Plan. The regulatory program includes the certification of communities to allow them to permit projects with certain exceptions. SMC recertifies communities every three years and now requires certification testing for Enforcement Officers as well as Certified Wetland Specialists. SMC continues to review permit applications for non-certified communities and approves base flood elevations, local government floodplain projects, LCDOT and forest preserve projects, and interjurisdictional projects. SMC conducts field inspections on SMC-permitted developments, potential WDO violations and initiates enforcement actions when necessary. In addition, SMC provides technical assistance related to regulatory issues. SMC has recently completed a major update to the WDO to include isolated wetland provisions. An update of the Technical Reference Manual for the WDO is scheduled for completion in 2002.

Regulatory services includes the following ongoing activities:

- Review and Permitting
- WDO countywide interpretation
- Community certification process including conformance reviews, community assessment visits and other coordination with state regulatory agencies
- Update and administer the Enforcement Officer and Certified Wetland Specialist Exams
- Inspections and enforcement actions
- Permit tracking
- Wetland jurisdictional determinations
- Soil Erosion Sediment Control review per four agency agreement
- Maintain hydrologic and hydraulics models library

2.1.5 Public Information

Public information is a critical component of the SMC stormwater management program. This function includes all aspects of planning, preparing and disseminating information to the public. It involves both the proactive task of informing the public as well as the reactive task of responding to public inquiries.

The current public information program includes the following activities:

- Development and distribution of pamphlets, manuals and brochures
- Quarterly newsletters and Annual Report
- Press Releases, Project Fact Sheets, media outreach, event planning
- Presentations to agencies, citizen groups, public officials and professional associations
- Web site development and maintenance
- Sponsor technical training and public awareness workshops

2.1.6 Maintenance

Maintenance activities primarily include rehabilitative projects, which are intended to maintain and restore the existing stormwater drainage system within the county. This type of work includes streambank restoration and stabilization, restoration of impaired conveyance and drainageway systems, and restoration of existing detention and flood control facilities. Maintenance needs for streams and detention basins are identified during the watershed planning process. Many maintenance activities are funded through the WMB program and grants. These projects are typically smaller in scale and budget and implementation is frequently assisted through the efforts of the surrounding community. Routine inspection and maintenance of wetlands, drainageways, detention basins, and flood control facilities may become a future program item, but has not been undertaken by SMC to date.

2.1.7 Capital Improvements

The capital improvement function involves the design, construction services and construction of capital improvement projects. These projects are typically implemented to mitigate and reduce flood damages or to preserve and improve water quality. The projects represent the implementation stage of previous planning efforts. Grants, Capital Improvement Program (CIP) money, the WMB program, SMC and local government contributions fund the majority of these projects. SMC actively searches for funding and applies, obtains, and allocates funding for capital improvement projects. In addition, the SMC must prioritize the funding to address the most critical and deserving projects. Currently, the SMC is designing, managing or constructing some capital improvement projects.

Capital Improvements includes the following examples of activities:

- Williams Park floodplain buyouts
- Construction of Del Mar Woods Subdivision outfall
- Design of Del Mar Woods Subdivision internal drainage system
- County-wide floodplain house buyout
- Design of Storm final phase drainage system

2.2 Current Program Organization

SMC currently consists of 18 planners, engineers, specialists and administrative support (Figure 2-1). This organization performs the activities and services that comprise the stormwater management program. Some functions involve all staff, while other functions involve more specialization. Figure 2-2 shows a matrix of the staff and Figure 2-3 shows the functional responsibilities that their position entails.

Figure 2-2: SMC Current Program Staff

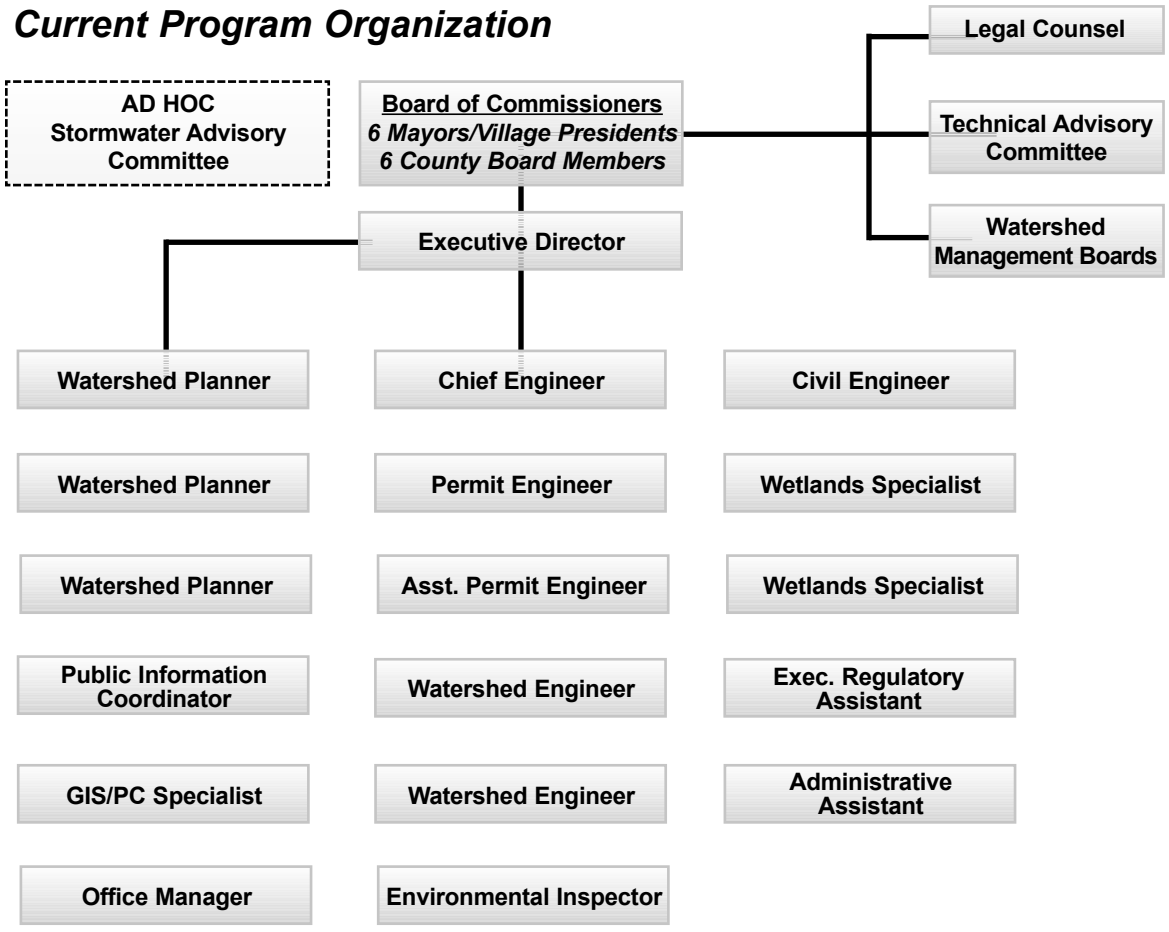


Figure 2-3: SMC Functional Responsibilities by Position

FUNCTIONAL RESPONSIBILITY	Executive Director	Chief Engineer	Office Manager	Permit Admin. Assistant	Public Info. Coordinator	Watershed Engineer	Watershed Planner	Wetland Specialist	Permit Engineer	Environ. Inspector	Civil Engineer	GIS Analyst
1. Administration												
Liaison to County Government	✓	✓										
Human Resources	✓	✓	✓	✓	✓							
Office Management			✓	✓								
PC/Network Support												✓
Internal Communication and Coordination	✓	✓	✓	✓		✓	✓		✓			
Career Development and Training	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Financial Management and Purchasing	✓	✓	✓	✓								
Budget Development and Tracking	✓	✓	✓	✓		✓	✓	✓	✓			
Commission Support	✓	✓	✓	✓	✓		✓					
2. Planning Services												
Watershed Planning		✓	✓		✓	✓	✓	✓			✓	✓
Regional Planning	✓		✓		✓	✓	✓	✓				
Institutional Planning	✓	✓	✓		✓	✓	✓	✓				
Project Planning												✓
Flood Damage Reduction Projects		✓				✓	✓		✓			
Water Quality Projects		✓				✓	✓	✓	✓			
Wetland Projects		✓				✓	✓	✓	✓			
3. Engineering Services												
Non-Regulatory Technical Assistance		✓				✓	✓	✓	✓	✓	✓	
Rain Gauge/Stream Gauge Network		✓			✓						✓	✓
Flood Event Response		✓		✓					✓	✓	✓	
GIS Development				✓		✓	✓	✓	✓			✓
Non-Regulatory Wetland Program				✓				✓				
Flood Plain Mapping Management		✓				✓	✓				✓	✓
Drainage Problem Resolution		✓		✓		✓	✓		✓	✓	✓	
CIRS		✓		✓	✓	✓	✓	✓	✓	✓	✓	
4. Regulatory												
Permit Process		✓		✓		✓	✓	✓	✓	✓		
Inspection Services		✓		✓		✓		✓	✓	✓	✓	
Enforcement Actions		✓		✓				✓	✓	✓	✓	
Regulatory Technical Assistance		✓		✓		✓		✓	✓	✓	✓	
Ordinance/TRM Updates		✓		✓				✓	✓			
5. Public Information												
General Public Education and Information	✓				✓	✓	✓	✓	✓	✓	✓	✓
Technical Training		✓		✓	✓	✓	✓	✓	✓			
Provide Opportunities for Public Input						✓	✓	✓	✓			
6. Maintenance												
Rehabilitative Projects		✓				✓	✓					
Routine Maintenance (Future program item)												
7. Capital Improvement												
Design		✓				✓	✓	✓	✓			
Construction Services		✓				✓				✓	✓	
Construction (including acquisitions)							✓		✓	✓	✓	

2.3 Current Costs and Revenue Sources

The current costs and revenue sources were developed from budget information provided by SMC. The expenditures budget can be divided into three categories: SMC internal budget, the CIP budget and the grants-expenditures budget. Revenue for SMC and SMC projects is received from four primary sources: property taxes, permit fees, Lake County's Capital Improvement Program (CIP) and grants.

2.3.1 Current Costs

Expenditures were allocated into functional responsibilities (Section 2.1) to develop a cost of service for the current SMC stormwater management program.

The SMC prepares a line item budget on an annual basis. This budget includes all expenditures such as salaries and benefits, office operations, equipment purchase and maintenance, printing, vehicles, consultants, contractors, etc. Excluding the contractor and consultant expenditures, SMC has an overhead multiplier of approximately 1.5. This factor represents the cost required to operate SMC as a multiplier of the direct salary cost. Interviews were conducted with SMC staff to develop allocations of time (and costs) for the functional responsibilities. Several line items of the SMC internal budget such as consultants and contractors were assigned to functional responsibilities based on the nature of the individual contracts (i.e.- a hydrologic study would be assigned to watershed planning). This same approach was used for each project funded by the CIP budget. Projects funded by grants were similarly assigned to functional responsibilities, however, unlike the SMC internal and CIP budgets, grant monies are not necessarily utilized in the year they are received. Additional interviews with SMC managers of grant projects were conducted to determine the expected utilization of the grant money. This information on the SMC internal budget, CIP budget and expected grant utilization was tabulated to develop a total cost of service for the functional responsibilities.

Figure 2-4 shows the breakdown of costs for the seven functional responsibilities based on the total 2001 budget ($5,596,000) for the stormwater program. This budget includes the SMC internal budget, CIP budget and grant monies. The current stormwater management program costs are allocated across seven functional areas. Planning services and capital improvements are 39% and 43% of the 2001 budget, respectively. The remaining functional areas are much smaller components ranging from less than 1% to 6%. Figure 2-5 shows the breakdown of costs for the SMC internal budget allocations based on the total internal 2001 budget ($2,281,000). This internal budget does not include the CIP budget and grants that are typically used to fund capital improvement projects. Thus, capital improvements are de-emphasized at 12%, however planning still comprises a major portion of the SMC internal budget at 44%. As described in the 1990 Plan, watershed planning is an essential first-step in overall program development, thus this emphasis in the budget is appropriate. After plans are developed, the emphasis on capital projects and maintenance will increase.

Figure 2-4: Cost of Service for Current Stormwater Management Program

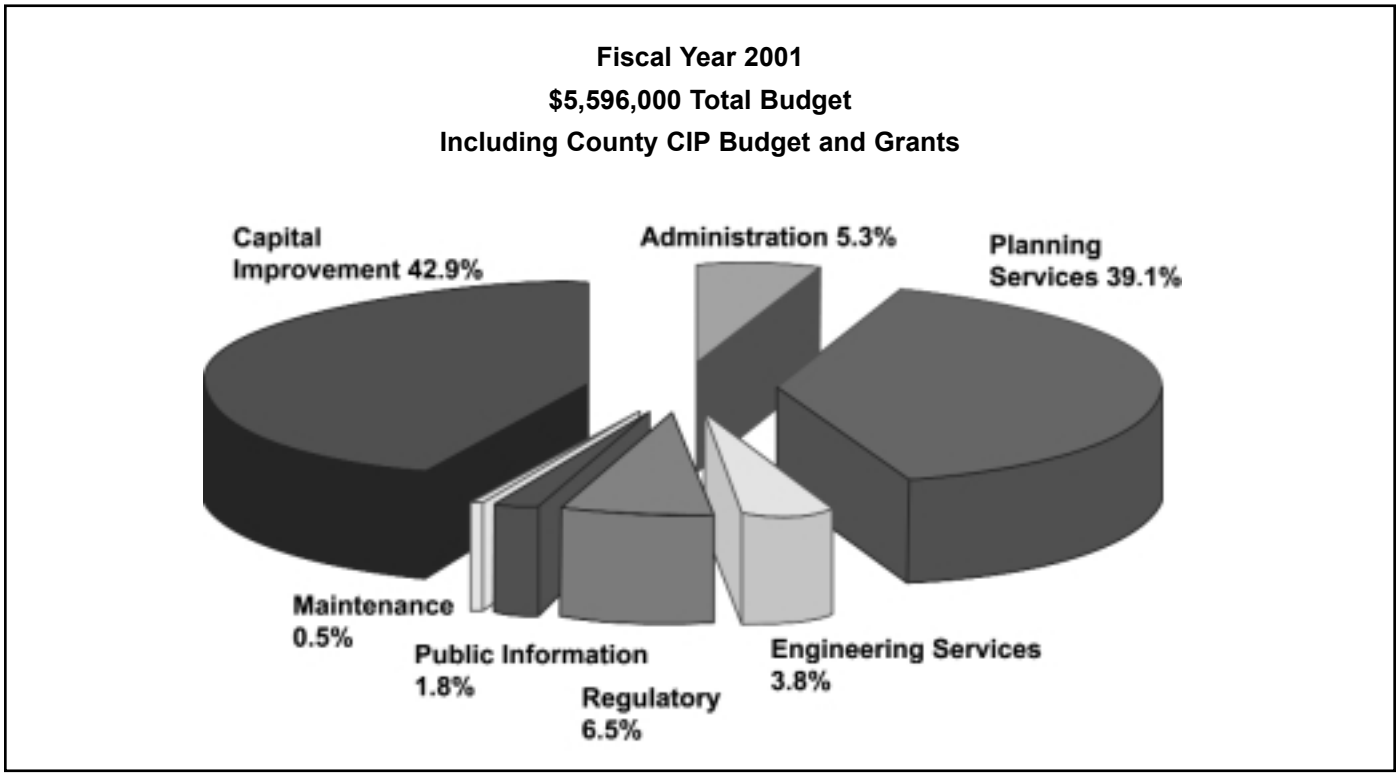
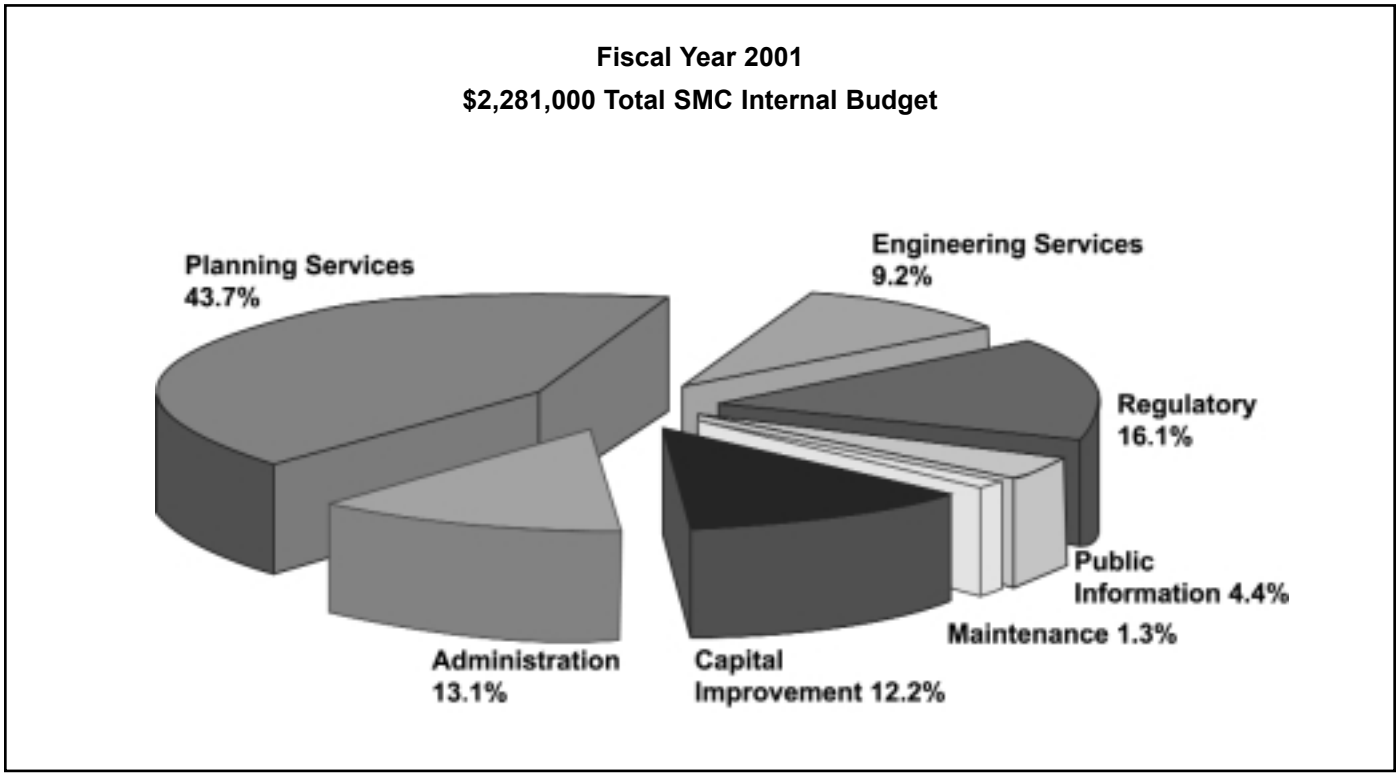


Figure 2-5: SMC Internal Costs



The cost of service for each functional responsibility and revenue sources are shown in Table 2-1.

Table 2-1: Cost of Service Based on Functional Responsibilities and Revenue Sources

Functional Responsibility	Percent of Total Budget	Total Costs	Budget Revenue Source		
			SMC Internal Budget	CIP Funds	Grants
Administration	5.3%	$298,900	$298,900	$0	$0
Planning Services	39.1%	$2,187,900	$997,100	$795,000	$395,800
Engineering Services	3.8%	$210,300	$210,300	$0	$0
Regulatory	6.5%	$366,200	$366,200	$0	$0
Public Information	1.8%	$100,100	$100,100	$0	$0
Maintenance	0.5%	$29,400	$29,400	$0	$0
Capital Improvement	42.9%	$2,403,600	$278,700	$250,000	$1,874,900
Totals	**100%**	**$5,596,400**	**$2,280,700**	**$1,045,000**	**$2,270,700**

2.3.2 Revenue Sources

The 1990 Comprehensive Stormwater Management Plan was developed with the anticipation that SMC would be a $5 to $7 million a year agency for the first four years. This funding never materialized when state legislation limiting increases in property tax revenues was approved before staff operations began. Figure 2-6 shows the revenue history of SMC since 1989 (for the first two years the agency operated as the Stormwater Management Planning Committee without staff). These historical figures include only the revenues that are used for the SMC internal budget. Property taxes and permit fees collected by SMC fund the SMC internal budget. It is the responsibility of SMC to apply for CIP funds and grants to fund projects and programs outside of the SMC internal budget. Figure 2-7 shows the breakdown of the three expenditure budgets: SMC internal, county CIP and grants. SMC has successfully leveraged limited grant funds into significant capital projects and other initiatives. Over the ten years, grants have allowed SMC to leverage anywhere from 9 to 14 dollars for each SMC dollar spent. CIP funds and grants are critical revenue sources as they account for 60 percent of the current stormwater management program.

Figure 2-6: SMC Funding History

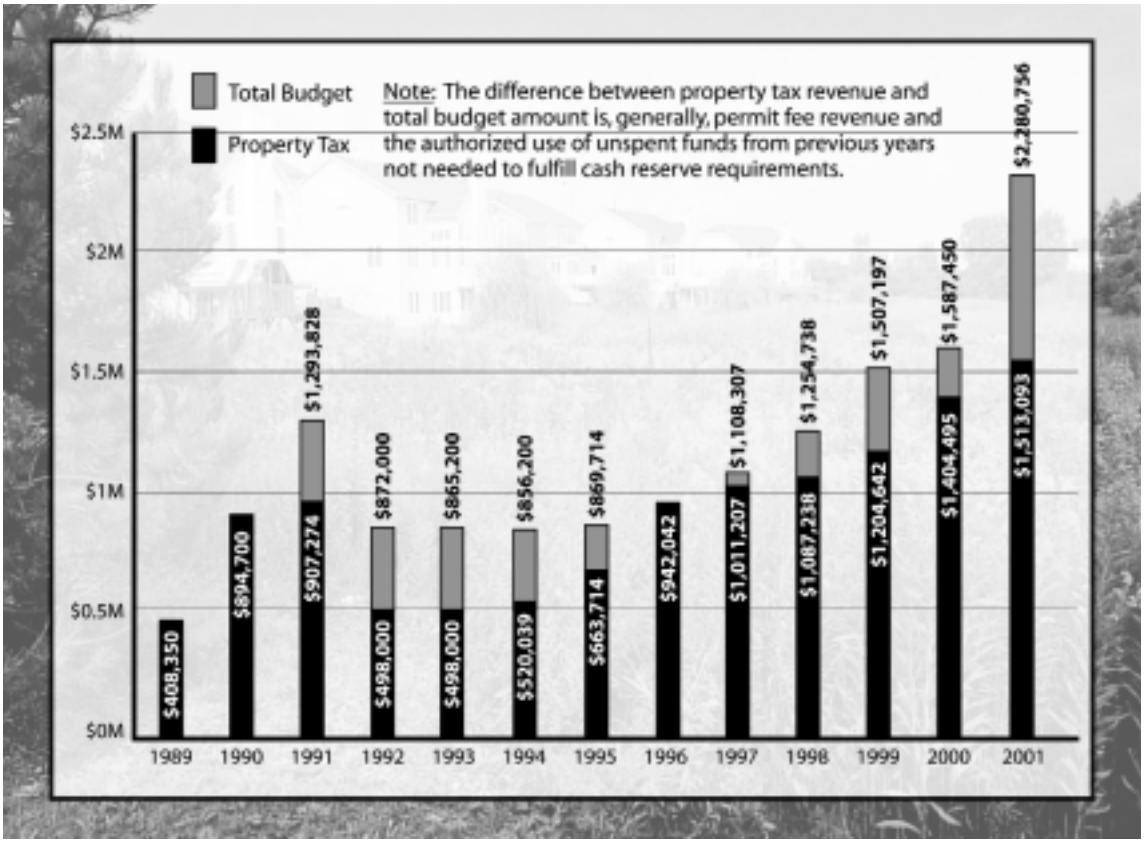
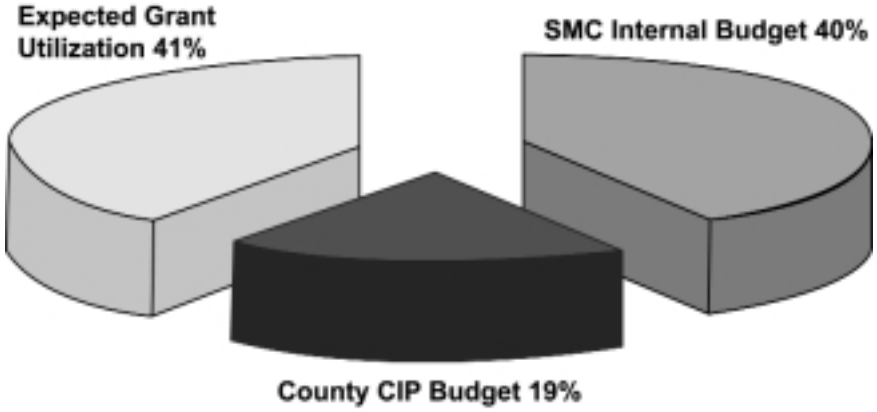


Figure 2-7: Breakdown of Expenditure Budgets for Current Stormwater Management Program

$2,281,000 Internal Budget
$1,045,000 County CIP Budget
$2,271,000 Expected Grant Utilization
$5,596,000 Total Budget



2.4 1990 Comprehensive Stormwater Management Plan

The 1990 Comprehensive Stormwater Management Plan created the initial SMC organizational model and budget through a preliminary cost of service analysis based on a number of assumptions. With the growth of the county and the further definition and evolution of SMC's roles, many of these assumptions are no longer valid, especially with regard to the types and amounts of services provided by SMC.

2.4.1 Roles and Responsibilities

A responsibility matrix was developed in the 1990 Plan to identify the roles of SMC and other communities and agencies in Lake County stormwater management. The matrix was reordered based on the functional responsibilities identified in Section 2.1 and updated for the current program as shown in Table 2-2.

Table 2-2: SMC Role Comparison 1990 Plan versus Current SMP

Responsibility	1990 Comprehensive Plan			Current Role of SMC		
	Primary Role	Advisory Role	No Involvement	Primary Role	Advisory Role	No Involvement
Administration/Management						
Public Information/Request	✓			✓		
Budget Preparation/Administration	✓			✓		
Personnel	✓			✓		
Data Management (GIS/MIS)		✓		✓		
Inter-Agency Agreements/Contract Administration	✓			✓		
SMPC and Committee Support Services	✓			✓		
Coordination among Agencies	✓			✓		
Legal/Claims	✓			✓		
Planning						
Long-Range/Comprehensive	✓			✓		
Watershed Planning	✓			✓		
Facility Needs Programming (CIP)	✓			✓		
Multiple-Use Coordination	✓			✓		
Floodplain-Floodway Mapping		✓		✓		
Public Education	✓			✓		
Facility Performance Monitoring		✓			✓	
Regional/Agency Coordination	✓			✓		
Water Quality	✓			✓		
Flood Hazard Mitigation	✓			✓		
Short-Range (Annual) Planning	✓			✓		
Engineering						
Project Management	✓			✓		
Contract Administration	✓			✓		
Inspection	✓			✓		
Survey	✓			✓		
Right-of-Way			✓			✓
Design Standards/Criteria/Modeling	✓			✓		
Facility Design	✓			✓		
System Inventory and Condition	✓			✓		
Monitoring Quality and Quantity	✓				✓	
Emergency Preparedness and Response		✓			✓	
Regulatory						
Permit Management	✓			✓		

Continued

Table 2-2: SMC Role Comparison 1990 Plan versus Current SMP, continued

Responsibility	1990 Comprehensive Plan			Current Role of SMC		
	Primary Role	Advisory Role	No Involvement	Primary Role	Advisory Role	No Involvement
Regulatory						
Development Review	✓			✓		
Flood Plain Management (State)		✓		✓		
Administration of Regulations	✓			✓		
Enforcement of Regulations	✓			✓		
Development of Standards/Criteria	✓			✓		
FIS/FEMA Coordination		✓		✓		
Public Information						
Complaint Investigation Response	✓			✓		
Maintenance/Operations						
Closed Systems (pipes)		✓				✓
Channel (streams/drainageways)		✓			✓	
Catch Basin/Inlets		✓			✓	
Detention Basin		✓			✓	
Roadside Ditch/Culvert		✓			✓	
Maintenance/Management System	✓				✓	
Mowing		✓				✓
Pump Station/Mechanical		✓				✓
Erosion Control/Stabilization		✓			✓	
Small Project Construction	✓			✓		
Capital Improvements						
Renewal and Replacement		✓				✓
Flood Damage Reduction	✓			✓		
Acquisitions	✓			✓		
Grant Administration	✓			✓		
Bond Sale/Repayment	✓					✓
Administration	✓			✓		

2.4.2 1990 Implementation/Action Plan

The 1990 Plan included a four-year Action Plan that established program development priorities. Due to the severe funding limitations, many of the goals established for the first four years are still unmet. Table 2-3 lists the tasks from the four-year Action Plan arranged by functional responsibility. The current status of each task is indicated in the third column. While there have been many accomplishments in ten years, work is still ongoing to achieve some major initial goals such as the completion of Watershed Management Plans.

Table 2-3: Lake County Stormwater Management 1990-1994 Implementation/Action Plan Status

Functional Responsibility	Task	Task Status as of 2000		
		Accomplished	Partially Addressed	Not Addressed
Administration	Implement Organization through Staffing Plan and Procedures Development	✓		
	Develop Management Information System (MIS) and Implement			✓
	Develop Policy and Procedures Manual	✓		
	Expand Total System of Service Charges to Adequately Fund Routine Maintenance, Enforcement, NPDES, and Small Improvements			✓
	Implement System Developer Charges			✓
Planning Services	Develop Legislative Agenda to Address Long-Term Funding Needs ◆ Service Charge ◆ Secondary Funding		✓	
	Prepare Model Intergovernmental Agreement for SMPC/Municipal Operational & Financial Planning			✓
	Develop Procedure for Watershed Committees	✓		
	Formally Adopt Proposed Stormwater Management Plan	✓		
	Define Operations Tasks & SMPC Roles/Responsibilities Beyond Completion of SWM Plan		✓	
	Establish Watershed Committees	✓		
	Develop Allocation Formula for SWM Levy to Watershed Committees	✓		
	Define Appropriate Levels of Service Necessary for Programs within Watersheds		✓	
	Determine Long-term Legislative Strategy for all SWM Components (quantity, quality, NPDES)		✓	
	Integrate Storm Drainage Policies with Other Land Use Policies Adopted by Local Agencies		✓	
	Identify System Problems of Group One Basins; Watershed Plans and County-wide Flood Hazard Mitigation Plan		✓	
	Prepare SWM Quantity/Quality Needs Assessment of Group One Basins			✓
	Prioritize Basins Based on Needs Assessment			✓
	Begin Topographic Mapping Program to Expand USGS as Necessary		✓	
	Prepare Solicitation for Basin Master Plans		✓	
	Hire Basin Master Plan Consultant & Finalize Work Plan (7 of 26 underway or programmed)		✓	
	Manage Plan Development/Recommendations in Terms of: ◆ Quantity Management/Modeling ◆ Quality Management/Modeling ◆ Structural Program ◆ Non-Structural Program ◆ Financing Approval		✓	
	Prepare Program Framework for NPDES Compliance (NPS locations, outfalls, levels, contaminants)		✓	
	Finalize Basin Master Plans (3 subwatersheds)		✓	
	Review/Revamp Basin Planning Process & Move to Next Basin on Priority List		✓	
	Prepare NPDES Permit Application			✓
	Prepare Stormwater Major System Inventory (7 of 26)		✓	

Continued

Table 2-3: Lake County Stormwater Management 1990-1994 Implementation/Action Plan Status, continued

Functional Responsibility	Task	Task Status as of 2000		
		Accomplished	Partially Addressed	Not Addressed
Planning Services	Establish Rules/Regulations and Procedures to Comply with NPDES for Water Quality		✓	
	Prepare Capital Programming Guide for Watershed Committees			✓
	Overlay onto these Inventories Known Problem Locations with Severity and Sources Identified (FHMP)	✓		
	Prioritize Problems		✓	
	Prepare Structural/Nonstructural Methods Opposite Problem Descriptions			✓
	Develop cost Estimates for the Structural Solutions Identified			✓
Engineering Services	(No 1990 tasks fell into the current definition of this category)			
Regulatory	Adopt the Technical Reference manual Currently under Development	✓		
	Adopt Maintenance Standards for Drainage Ditches		✓	
	Adopt County-Wide Stormwater Ordinance	✓		
	Prepare/Finalize Drainage Plan Review Procedures	✓		
	Instruct Watershed Committees on Permit and Variance Procedures re: Drainage Plans		✓	
	Complete a Mid-term and Long-Range Regulatory Strategy Identifying Specific Stormwater Elements Including: ◆ Release Rates ◆ Design Storms ◆ Detention ◆ Exemptions ◆ Water Quality ◆ Special use Sensitive Areas	✓		
Public Info.	Develop and Construct Series of Training Programs in Hydraulics and Modeling for Local Agencies and Developer Engineers			✓
	Develop Response Program to Complaints and Inquiries on Violations Received from Public	✓		
Maintenance	Define Work Programs and Activities within the Watersheds		✓	
	Design and Implement Maintenance Reporting System			✓
	Construct Reasonable Performance Levels			✓
	Establish Budgeting and Revenue Allocation Methodologies			✓
	Allocate maintenance Functions Among Municipalities, Townships, County, Contract			✓
	Implement Certification Program to Assure Local Agency maintenance of Regional Facilities			✓
Capital Improvement	Based on Adopted Plans Undertake Capital Improvements for Highest Priority Projects within Priority Projects within Priority 1 Basins[1]			✓
	Allocate Resources Based on Criteria Established through the SMPC, WMB and N-Branch	✓		
	Prepare 5 Year CIP and Budget Recommendation Including Levy or County's CIP		✓	

1. Priority 1 Basins: Aptakisic Creek, Bull Creek, Chain O'Lakes, Flint Creek, Indian Creek, Middle Fork, Upper Des Plaines River and Skokie River

Section 3
Countywide Stormwater Management Needs

The process of defining SMC's roles and responsibilities for stormwater management must consider its authority, its mission, its capabilities (funding) and the overall needs for stormwater management in Lake County. These "universal" stormwater management needs are independent of responsibility or jurisdiction. In 1987, Lake County recognized the need for a proactive, comprehensive approach to stormwater management by establishing the Stormwater Management Planning Committee. This committee evolved into the Stormwater Management Commission (SMC) and some of the fundamental needs that existed in 1987 have since been addressed. However, urbanization, regulation changes, and heightened public expectations and awareness continue to expand and increase the County's stormwater needs. This section presents a general overview of the current universal stormwater management needs in Lake County.

3.1 Identification of Countywide Needs

Countywide stormwater needs were identified in the 1990 Comprehensive Stormwater Management Plan. The anticipated funding required to address all of these needs never materialized and many needs must still be addressed. Some needs, such as maintenance of stormwater facilities, are not only ongoing but also increasing over time. New development results in more stormwater facilities that require maintenance. The 1990 Comprehensive Plan was used as a starting point for the current needs identification effort.

Current countywide needs were identified through three primary sources: SMC staff, a countywide survey and the Stormwater Advisory Committee (SAC). SMC staff have attained extensive experience and knowledge about the stormwater needs of Lake County over the past ten years. SMC staff contributed valuable information on the current needs of Lake County. A survey/ questionnaire on stormwater needs was prepared and distributed to approximately 90 entities representing municipalities, drainage districts, townships, agencies with stormwater responsibilities and grassroots organizations in Lake County. The SAC provided input over the course of five workshops in which discussions focused on the fundamental needs for stormwater management in the County.

3.2 Countywide Needs

Needs were organized by the seven functional responsibilities that define the stormwater program and services.

3.2.1 Administration

Administrative needs are inherent to any program, but receive little emphasis or attention when discussing stormwater management needs. Some municipalities cited a lack of staff or qualified personnel necessary to implement future stormwater management requirements. The administrative functions of SMC involve interaction with County Government, human resources, office management and financial management. Existing staff are able to execute all administrative functions based on the current staff size and extent of stormwater services. Most administrative activities are incidental to the other stormwater activities in a countywide program.

3.2.2 Planning Services

Planning services include institutional planning to guide SMC and planning for the stormwater issues at the regional, watershed, site, and project levels. It was recognized that regional planning

and coordination between counties, states and agencies could be improved. Specific needs were identified for watershed planning, site-specific planning and project planning throughout the county.

3.2.2.1 Watershed Planning

Watershed planning includes the preparation of comprehensive watershed management plans for each of the 26 subwatersheds in Lake County. To date, comprehensive plans have been completed or are underway for six subwatersheds. Water quality planning has also been completed or is underway for an additional eight subwatersheds. There is an immediate need for the prioritization and completion of the remaining watershed plans. Additional mapping and stream inventory projects support watershed planning and assist in the preparation of these plans. Detailed countywide digital topographic maps are needed to assist with all planning and preliminary engineering efforts. Also, a countywide stream inventory is needed to establish the level of effort required for the preparation of watershed management plans. Stream inventories have already been completed for 10 subwatersheds. An objective system is needed to establish priorities for the completion of the remaining watershed plans.

Watershed Planning Needs:

- Complete and adopt watershed management plans for 23 remaining subwatersheds.
- Countywide digital topographic maps
- Countywide stream inventory for remaining 16 subwatersheds.
- System for prioritization of watershed management planning.
- For completed plans, evaluate progress and update as needed.
- Up-to-date hydrology and hydraulic models, water quality models and floodplain mapping that is accurate and reflects depressional floodplains.

3.2.2.2 Project Planning

Project planning includes planning and analysis to evaluate alternatives and develop solutions to address problems related to flood damages, water quality, wetlands, restoration and rehabilitative projects at specific sites. Flood damage reduction is probably the most visible program of stormwater management. However, the need to consider water quality and ecological concerns has grown due to pending NPDES Phase II regulations and public awareness. A stormwater master plan or a watershed plan cannot address all of the site-specific details and concerns within a watershed, however, these issues are considered during individual project planning.

Ideally, the watershed management plans for the 26 subwatersheds would be completed to guide project planning efforts. These watershed management plans will identify needs and opportunities for stormwater projects. The plans will also assist in establishing priorities by identifying the extent and severity of existing problems in the watersheds. Site-specific project planning will continue throughout Lake County with or without the wider perspective that ultimately will be provided by the watershed plans.

A study to assess countywide flood damage areas was completed for the countywide Flood Hazard Mitigation Plan (FHMP). Flood damage reduction projects are needed to solve over 300 problem areas throughout the county. These projects may include acquisition, floodproofing, or other means to reduce flooding such as the construction of floodwater storage facilities. These problem areas must now be prioritized to guide project planning. Similarly, countywide plans are needed to prioritize wetlands, restoration and rehabilitative projects. These plans will be based on available data and can be updated as necessary as detailed watershed planning efforts are completed. A countywide

water quality strategy is needed to define a process by which to evaluate water quality and multi-objective opportunities in all projects.

Project planning has been limited by available funding. Increased project planning is needed to address the numerous flooding and water quality problems across the county.

Project Planning Needs:

- Needs assessment with more detail and documentation.
- Prioritization of flood damage areas identified in the FHMP.
- Site-specific flood mitigation plans for high priority flood problem areas.
- Countywide Strategy for Water Quality Protection and Enhancement.
- Countywide Wetland Preservation and Restoration Plan.
- Countywide Drainage System. Restoration and Rehabilitation Project Plan.
- Increased project planning.

3.2.3 Engineering Services

Engineering services include functions that are non-regulatory and associated with activities other than project planning and design. These include technical assistance, maintenance of the rain and stream gauge network, flood event response, GIS development, floodplain mapping and management, wetland delineation and drainage problem resolutions.

Municipalities, government agencies and grassroots organizations have expressed an ongoing and growing need for technical assistance. Increased access to stormwater experts that can provide technical guidance or perform peer reviews of work products is needed.

Collection of rain gauge and stream gauge data and maintenance of the network is essential to support stormwater engineering efforts in the county. The accuracy of hydrologic and hydraulic studies can be greatly enhanced when calibration data is available. In addition, this network is needed to develop an early flood warning system for Lake County. Additional rain and stream gauge data are necessary.

Emergency flood services need to be enhanced countywide. This includes flood event planning, flood event response and post-flood recovery activities. Flood event planning is needed to prepare an emergency response plan and training of response personnel. Definition and coordination of roles and responsibilities during a flood event is also needed. Finally, a permanent decision-making body is needed to guide decision-making during post-flood recovery efforts.

Geographic information systems (GIS) are playing an ever-increasing role in stormwater management. GIS can be used to store and retrieve almost any type of data related to a geographic location. Information such as land use, soils, topography, flood damages, stormwater facilities, buildings, and waterways can all be stored in layers. This data is useful to almost anyone involved in managing stormwater and planning, engineering, permitting or maintaining stormwater facilities. Collection, processing and distribution of data to these users is needed.

Floodplain and depressional storage mapping and maintenance of the floodplain map inventory are of critical importance to stormwater management in Lake County. These maps are used in all aspects of SMC's work. Many of the current maps are outdated or inaccurate. There is a need to prepare updated analysis and floodplain maps for these areas using the most up-to-date topographic mapping data. In addition, engineers and other interested parties often need to check with more than one source to determine if

floodplain map updates may have occurred at a particular location. Agencies should coordinate mapping data and a single entity should maintain all current maps and the supporting data for distribution to the public. These maps should be integrated with the GIS system and updated as floodplain revisions are made as a result of updated analysis or through regulatory actions.

NPDES Phase II stormwater regulations will need to be addressed by the beginning of 2003. Many municipalities in Lake County have not begun to plan for the impacts of the regulations. Some municipalities do not have available or qualified staff to complete the planning and eventual implementation of these regulations. These communities are in need of assistance to plan and implement the requirements of the Phase II regulations. SMC should collaborate with local governments to more cost-effectively meet some or all of the requirements on a countywide basis.

Engineering Services Needs:

- Expanded non-regulatory technical assistance available to municipalities, agencies and grassroots organization.
- Collection and expansion of rain gauge and stream gauge data and maintenance and expansion of network.
- Early flood warning system and Flood Emergency Action Plan.
- Expand countywide GIS system and increase availability.
- Updated floodplain and depressional storage mapping and responsive floodplain map management.
- Offer wetland delineations for private small property owners.
- NPDES Phase II program assistance.

3.2.4 Regulatory

The regulatory function involves the development and enforcement of regulations to control stormwater runoff. Many of the regulatory needs identified in the 1990 Comprehensive Plan have since been addressed. A countywide Watershed Development Ordinance (WDO) was adopted in June 1992 and a companion Technical Reference Manual was prepared. Permitting, inspection and enforcement programs are in place. Certified communities and SMC enforce uniform and equitable standards throughout the county. Regulatory needs will be dependent on the future rate of land development throughout the county. Some additional staff support may be needed to keep pace with future development and redevelopment activities, especially for inspections and enforcement. The WDO and Technical Reference Manual must be "administered" and periodically updated to be consistent with changing regulations and technologies. These documents must be readily available to the public and access to web-based regulatory information is needed.

Recent adoption of the isolated wetland program will require additional efforts to review wetlands permits and provide expanded regulatory assistance. Jurisdictional wetland determinations are required for all proposed developments in Lake County. The Interagency Coordination Agreement with the U.S. Army Corps of Engineers allows SMC wetland staff to perform jurisdictional wetland determinations. Private small property owners that may have interest in seeking a watershed development permit need these determinations to be made without undue time or financial burden.

Regulatory Needs:

- Expand permit review, inspections and regulatory technical assistance for isolated wetlands program.
- Additional capacity for increased future rate of growth.

3.2.5 Public Information

Public information is a critical component of the

overall watershed management program. This function includes all aspects of planning, preparing and disseminating information to the public. It involves both the proactive task of informing the public as well as the reactive task of responding to public inquiries.

A requirement of NPDES Phase II is public education. According to these USEPA regulations, a community "must implement a public education program to distribute educational materials or conduct equivalent outreach activities about the impacts of stormwater discharges on water bodies and the steps that the public can take to reduce pollutants in stormwater runoff." Public education is not only required by these regulations, but it is also crucial to aid in the overall improvement of water quality throughout Lake County.

Another requirement of NPDES Phase II is implementing a public involvement and participation program. Citizen involvement and participation, in conjunction with educational programs, is needed to meet the requirements of the Phase II regulations. A public involvement program that provides opportunities for public input will promote better surface water quality throughout the area.

Technical training for municipal leaders, consultants and the public is needed to further the ability to meet new regulations. The development of new stormwater management roles and any future changes to regulations require additional training for planners, engineers and contractors. A training program will enable engineers and contractors to be able to better comply with these new and expanded roles. For example, a certification program for soil erosion professionals, inspectors, and contractors may be needed in conjunction with expanded training opportunities.

The existing public education program needs to be expanded to further educate citizens about current programs and services available in the county. This need was emphasized when some survey responses identified a need for programs that in fact already exist.

Public Information Needs:

- Public education required by NPDES Phase II regulations.
- Public involvement required by NPDES Phase II regulations.
- Increased public awareness of existing programs and services.
- Opportunities for public input as part of normal process of watershed planning and project development.
- Additional technical training for engineers and contractors.

3.2.6 Maintenance

Maintenance activities include routine maintenance as well as restoration and rehabilitative projects, which are intended to maintain and restore the existing, natural, and constructed stormwater drainage system within the county. This type of work includes catch basin cleaning, debris removal, streambank restoration and stabilization, rehabilitation of impaired conveyance and drainageway systems, and rehabilitation of existing detention and flood control facilities. Routine maintenance activities are typically funded at the local level. Restoration and rehabilitative projects are partially funded through the WMB program and grants. These projects are typically smaller in scale and budget and implementation is frequently assisted through the efforts of the surrounding community. However, little has been done on a comprehensive, systemwide level for maintenance of drainage facilities. Not only is there a need for systematic maintenance, there is also a need for an increased awareness regarding the value and importance of maintenance.

A countywide Stormwater Maintenance Plan needs to be developed in order to efficiently manage maintenance projects and funding. Identification of restoration and rehabilitation needs is a crucial first step for the development of a countywide stormwater maintenance plan. The plan will be based on identification of restoration and rehabilitation projects as well as routine maintenance components. The plan will also need to include countywide maintenance standards.

Funding will be needed to support the various components of the maintenance plan. An entity with countywide interests must address interjurisdictional maintenance needs. Local partners and local jurisdictions throughout the county need additional funding for routine maintenance as specified in the maintenance plan. If SMC cannot directly acquire additional funding, then it needs to facilitate additional funding for local partners and jurisdictions.

Countywide Maintenance needs:

- Raise awareness for value and importance of maintenance.
- Develop countywide Stormwater Maintenance Plan and minimum Standards.
- Memorandum of understanding for coordination with drainage districts.
- Identify restoration and rehabilitation needs as part of the Stormwater Maintenance Plan.
- Additional or new funding for stormwater maintenance needs.

3.2.7 Capital Improvement

Capital improvement involves the design, construction management services and construction of capital improvement projects, including acquisitions. These projects are typically implemented to mitigate and reduce flood damages and to preserve and improve water quality. The projects represent the implementation stage of previous planning efforts. Grants, County Capital Improvement Program (CIP) money, the WMB program, SMC contributions and local match currently fund the majority of these projects in the county.

There are over 300 flood problem areas throughout the county that require various types of flood damage reduction projects, both structural and non-structural. The total costs to complete these projects greatly exceed the current stormwater funding levels in the county. There is the need to expand funding for the design and implementation of capital improvement projects.

Capital Improvement Needs:

- Expanded funding for capital improve ment projects.
- Increased design and implementation of capital improvement projects.

3.3 Countywide Needs Summary

This general overview of the universal stormwater management needs establishes a set of goals for future SMC roles and responsibilities. The countywide needs are summarized in Table 3-1 on the following page.

Table 3-1: Countywide Stormwater Management Needs Summary

Category	Stormwater Management Needs
Administrative	◆ No substantial needs
Planning Services	◆ Complete and adopt watershed management plans for 23 remaining watersheds ◆ Countywide digital topographic maps ◆ Countywide stream inventory for 16 subwatersheds ◆ System for prioritization of watershed management planning ◆ Up-to-date hydrologic and hydraulic models ◆ Prioritization of flood damage areas identified in the FHMP ◆ Site-specific flood mitigation plans for high priority flood problem areas ◆ Countywide Strategy for Water Quality Protection and Enhancement ◆ Countywide Wetland Preservation Plan ◆ Countywide Restoration and Rehabilitation Project Plan ◆ Increased project planning
Engineering Services	◆ Expanded non-regulatory technical assistance available to municipalities, agencies and grassroots organizations ◆ Collection and expansion of rain gauge and stream gauge data and maintenance of network ◆ Early flood warning system and Flood Emergency Action Plan ◆ Expand countywide GIS system and increase availability ◆ Updated floodplain mapping integrated with GIS and responsive floodplain map management ◆ Wetland delineations for private small property owners ◆ NPDES Phase II program assistance
Regulatory	◆ Expand permit review, inspections and regulatory technical assistance for isolated wetlands program ◆ Additional capacity for increased future rate of growth
Public Info.	◆ Public Education required by NPDES Phase II regulations ◆ Public involvement required by NPDES Phase II regulations ◆ Increased public awareness of existing programs and services ◆ Opportunities for public input as part of normal process of watershed planning and project development ◆ Additional technical training for engineers and contractors
Maintenance	◆ Raise awareness for value and importance of maintenance ◆ Develop countywide Stormwater Maintenance Plan and Standards ◆ Memorandum of understanding for coordination with drainage districts ◆ Identify restoration and rehabilitation needs as part of the Stormwater Maintenance Plan ◆ Additional/new funding for stormwater maintenance needs
Capital Improvement	◆ Expanded funding for capital improvement projects ◆ Increased design and implementation of capital improvement projects

Section 4
Future SMC Stormwater Management Program Needs

4.1 Introduction

Lake County's countywide stormwater needs are significant, ranging from planning and public involvement, to maintenance and capital improvements. Although SMC has responsibility for stormwater management in Lake County, implementation of the many functions and tasks in a comprehensive stormwater management program is a shared responsibility by all the governmental jurisdictions in the county. The objective of this section is to define the breadth and scope of SMC's future role, vis-à-vis other jurisdictions, in implementing comprehensive stormwater management in the county, and to identify its specific functions, activities, and responsibilities.

4.2 Future Roles and Responsibilities for SMC

As described in Section 2, a system of functional responsibilities was developed to define the current stormwater program and services. The stormwater program was defined using seven "major" functional responsibilities:

1. Administration
2. Planning Services
3. Engineering Services
4. Regulatory
5. Public Information
6. Maintenance
7. Capital Improvements

These functional categories encompass essentially every aspect of stormwater management in the county. The future roles and responsibilities of SMC are described using these functional categories. Each function has a number of sub-categories that define specific aspects of the stormwater management program.

These functional categories and their activities were discussed in a series of meetings with the SAC. The purpose of these discussions was to determine the roles and responsibilities of SMC that balance countywide needs with SMC's mission, goals and objectives, authority, resources and funding capability. The result of this collaborative effort produced the recommended future roles and responsibilities of SMC for stormwater management in Lake County.

With this new direction, the roles and responsibilities of SMC will be expanded and enhanced to provide improved and much needed services to Lake County. This section defines, describes and quantifies the roles and responsibilities of SMC in the future stormwater management program for Lake County.

4.2.1 Administration

The current administrative functions of SMC are not expected to change significantly in the future, except for the need to administer an alternative dedicated funding mechanism. As SMC roles and responsibilities are increased and the staff grows, there will be increased administrative needs. Additional expenses include physical necessities (i.e. - office space, supplies, etc.) as well as additional administrative support for more staff performing more functions. Currently, SMC is comprised of 18 staff members. In order to perform all of the future roles and responsibilities in the full service stormwater management program, additional staff members will be needed. SMC should continue its philosophy of keeping staff size to a minimum with the use of cost-effective outsourcing for plans and projects. The need for additional staff is addressed under each functional category where services will be expanded or

enhanced and additional staff resources are required. Future administrative needs will likely be somewhat proportional to the eventual increase in staff size. ***SMC should increase its administrative resources as necessary to support any additional staff or services required and to carry out its future stormwater management responsibilities.***

4.2.2 Planning Services

SMC plays a key role in coordinating stormwater management activities across geographic, jurisdictional, and political boundaries. Planning services are conducted to guide all aspects of future stormwater management activities and are the critical first-step in formulating solutions to flooding problems. Planning services include watershed planning, regional planning, institutional planning and project planning.

4.2.2.1 Watershed/Subwatershed Planning

Watershed and subwatershed planning involves the comprehensive planning for the 26 subwatersheds that comprise the 4 major watersheds in Lake County. Comprehensive watershed planning involves detailed hydrologic and hydraulic analysis, an assessment of natural resources, stream corridor planning, an assessment of potential flood damages, development of mitigation measures, development of an implementation plan and documentation of the planning effort. These watershed management plans are necessary for flood damage reduction and prevention, natural resource protection and other multi-objective goals in the county.

As a fundamental principle of its mission, SMC is the only agency pursuing the preparation of comprehensive subwatershed management plans throughout the four Lake County watersheds. Grassroots organizations, municipalities and agencies such as the U. S. Army Corps of Engineers have contributed to individual or partial subwatershed planning efforts. At this time, three subwatershed plans have been adopted, three are underway and four will be completed as part of the Des Plaines River Watershed Plan. Sixteen subwatershed plans remain to be funded and completed.

SMC should manage and direct all subwatershed and watershed planning efforts in the county. However, progress has been limited by lack of funding. The development of subwatershed plans is one of the founding missions of the SMC and is critical to effective stormwater management and damage reduction. ***SMC should take primary responsibility for watershed planning and should complete the subwatershed plans as soon as possible to further define countywide stormwater management needs and required solutions. If different discharge rates are recommended as a result of the subwatershed planning process, SMC will advise locally affected communities to adopt the revised rates.***

4.2.2.2 Regional Planning

Regional planning involves efforts outside of Lake County that supercede county and state boundaries. SMC, the Corps, IEPA, IDNR and NIPC all take active roles in this process. The Corps, IDNR and IEPA have statewide or regional jurisdiction and authority. The Corps and IDNR lead regional flood control and restoration efforts while IEPA leads regional water quality efforts. NIPC is involved with regional policy planning. SMC supports and collaborates with all of these agencies, but does not take the lead for regional planning. ***No significant change is recommended for SMC's role in regional planning.***

4.2.2.3 Institutional Planning

Institutional planning involves the ongoing definition of SMC's program and services. SMC actively plans for how to implement its role in stormwater management in relation to evolving

countywide needs and changes in state and federal regulations. SMC pursues legislation and funding to further develop the stormwater management programs in Lake County. ***Although no change is expected in SMC's institutional role, this function will continue to be necessary in order for SMC to maximize its resources and best serve its constituents.***

4.2.2.4 Project Planning

Project planning includes planning and analysis for specific sites to evaluate alternatives and develop solutions to address problems related to various flood control, water quality, wetlands, restoration and rehabilitative projects. As watershed planning continues, SMC will continuously seek out opportunities for plan implementation. Site-specific planning includes the development of solutions for small areas that may involve a group of structures. Increased project planning efforts are needed in all areas to better address the needs of Lake County. SMC should initiate the "packaging" of collaborative projects with its partners. Project planning is required for all types of projects, including conceptual solutions proposed in the watershed plans.

4.2.2.4.1 Flood Damage Reduction Projects

These projects primarily focus on flood control and damage mitigation solutions such as detention storage, conveyance improvements, and flood protection and property acquisitions. Flood damage prevention and reduction are the primary reason for the original countywide stormwater management enabling legislation. SMC takes an active role in flood damage prevention and reduction, but is limited by available funding. The Corps and IDNR have authority when damages warrant and funding is available. SMC is forming an interagency flood mitigation committee to implement a countywide flood hazard mitigation plan. Known problems and needs far exceed SMC's current resources and capacity. ***However, as the original reason for its creation, SMC should take primary responsibility for planning flood damage reduction projects in the county and shifting more resources and focus to this effort.***

SMC prepared the Flood Hazard Mitigation Plan for Lake County. ***SMC should coordinate with LCEMA to add an all natural hazards plan component to the FHMP as required by FEMA.*** The Flood Hazard Mitigation Plan (FHMP) identifies known flood damages across the county.

CDM categorized the information on flood damages developed by SMC into two priority levels of flood problems. These two priority levels are: repetitive losses and hotspot flooding problems, and non-hotspot flooding problems (or other). Small area plans are needed to address the existing flood problems, which typically affect clusters of structures.

The highest priority flood damages involve repetitive loss structures or hotspot flooding problems. Repetitive loss structures have been repetitively flooded since 1978 and represent a disproportionate amount of claim payments through the National Flood Insurance Program (NFIP). SMC performed a repetitive flood loss study in 2001 and identified 108 properties in 52 locations throughout the county. The second type of high priority flood damages includes "flood problem hotspots." The FHMP identified flood problem hotspots as the areas with the greatest number of structures flooded and the highest frequency and severity of flooding and include repetitive loss properties. The 108 repetitive loss properties are included in the first priority level and hotspot flooding areas account for flood damages to an additional 1,469 structures.

The lower priority level flooding problems include all other structures identified in the

county. These problems may be due to any number of causes including depressional flooding, local drainage patterns, or sewer backup. The FHMP estimated there are up to 4400 additional structures in this category.

SMC should establish an action plan to prioritize and implement flood damage reduction projects that, historically, have been limited by lack of funding. Small area plans are needed to address identified flooding problems. Planning structural and non-structural flood damage reduction projects is the first step in implementation of comprehensive flood damage solutions. Flood damage prevention planning is completed as part of watershed planning. Between the three priority levels of flooding, there are up to 6000 structures that may experience flood damages in Lake County that should be addressed by SMC and its partners.

4.2.2.4.2 Water Quality Projects

Water quality projects may include erosion control projects, detention basin retrofits and Best Management Practice (BMP) implementation. BMPs are practices that prevent or reduce nonpoint source water pollution. High water quality is a critical component for preservation of the water resources of Lake County including fish and wildlife habitat, the lakes and rivers related tourism industry, as well as stable and effective drainageways and natural flood storage. Periodically, SMC has secured various funds for limited water quality projects. Municipalities, county and grassroots organizations may do water quality projects to achieve local benefits if the funding is available. ***SMC should prepare a countywide water quality strategy to guide and unify the efforts of the various organizations involved in water quality protection and enhancement.***

SMC and other organizations such as municipalities, counties and grassroots organizations should cooperate and collaborate with each other to implement water quality projects. Many water quality projects are implemented through the watershed management boards (WMB). These boards (one for each of Lake County's four watersheds) review local proposals for cost-share grants. Highest consideration for funding is given to those projects that benefit multiple jurisdictions that benefit the major drainage system of the watershed, and for projects that enhance natural resources.

Water quality projects are not single purpose facilities. Water quality projects will frequently provide some additional functions such as flood control, wetland restoration or habitat restoration and enhancement. SMC is well suited to optimize the blend of functions that proposed facilities would perform. Habitat enhancement is not a primary or secondary mission for SMC, but is consistent with preserving resources of the county.

Water quality improvement and the preservation of the county's natural water resources are a basic principle of SMC. ***Water quality improvements should be a primary responsibility of SMC.*** However, limited SMC funding has restricted the number of projects that have been planned and implemented. Initial opportunities for water quality projects are typically identified during watershed planning efforts. However, because countywide watershed planning will take a number of years to complete, a plan to identify high priority water quality projects throughout the county should be developed. ***SMC should implement needed water quality projects.***

4.2.2.4.3 Wetland Projects

Wetland project planning involves identifying opportunities for wetland preservation and restoration and wetland banking projects. The primary mission of SMC in this function should

be to maximize wetland functions as part of multi-objective stormwater solutions. Lake County Forest Preserve District (LCFPD), private companies and non-profit organizations also perform wetland restoration and wetland banking projects. Wetland banking projects or macro-sites are generally preferred over scattered small on-site mitigation. The larger macro-sites are more likely to succeed and many beneficial functions of wetlands are better realized when provided in large wetland units.

SMC should collaborate with LCFPD, townships, municipalities and others for maximizing wetland functions. These other entities should lead natural wetland protection efforts. However, efforts by others alone are limited and often have single purpose objectives. ***Wetland projects are major components of effective flood and water quality management and should be a primary responsibility of SMC. SMC should develop a wetland preservation and restoration plan that includes potential banking opportunities.***

4.2.2.4.4 Restoration and Rehabilitative Projects

Restoration projects "restore" waterways to more natural conditions. Rehabilitative projects fix and repair drainage systems to return them to their original design conditions, typically established through some earlier flood control or drainage project. Drainage system restoration and rehabilitation projects may be planned as a result of watershed planning recommendations or by municipalities, counties, drainage districts or citizens with a direct interest in the project. Priority projects should be identified through the watershed planning process.

SMC best understands watershed needs and impacts and can package flood damage reduction projects into multi-objective solutions. SMC is also best suited to recognize the need for conveyance capacity preservation and restoration. ***SMC should take primary responsibility for project planning on the trunk system, areas with more than 100 acres tributary or interjurisdictional waterways.*** Other organizations can contribute whenever possible and should lead efforts to plan projects confined to local jurisdictions. ***SMC should develop a restoration and rehabilitation plan for the trunk system as part of the countywide maintenance program.*** Project planning efforts should be increased as needs are identified and funds become available.

4.2.3 Engineering Services

4.2.3.1 Non-Regulatory Technical Assistance

SMC provides non-regulatory technical assistance to agencies, municipalities/county, grassroots organizations or others. This assistance involves reviewing and commenting on work products, responding to technical questions and providing technical support for parallel initiatives by other agencies.

SMC staff provides this service according to their expertise and on an as-needed basis. This function should be explicitly programmed to provide staff with the time needed to provide responsive and technically sound service. There are no other readily available resources for technical assistance at the county or local level. Although SMC should increase its interaction with grass roots organizations, this can be done in conjunction with other planning efforts. ***SMC should continue to provide non-regulatory technical assistance as necessary with and emphasis on assistance to local government officials.***

4.2.3.2 Rain Gauge/Stream Gauge Network

A joint program between SMC and United States Geological Survey (USGS) currently exists with SMC operating nine rain gauges and USGS operating rain gauges and stream gauges. SMC

will add up to ten more rain gauges over the next five years as USGS reduces the number of gauges it is supporting. Eventually, the USGS will discontinue or reduce its involvement in maintenance and operation of stream gauges in Lake County. At this time, SMC should be responsible for the operation and maintenance of the 7 combination stage and discharge gauges in Lake County. SMC regularly uses rain and stream network information in its planning and design of flood mitigation solutions, and the network could be used in the "Flood Warning System". ***SMC should continue to expand the rain gauge network and cooperate in the operation of the stream gauge system within the county and make the data more readily available and user-friendly.***

4.2.3.3 Flood Event Response

4.2.3.3.1 Emergency Action Planning
Emergency Action Planning is the preparation of emergency response plans and training of personnel. SMC, Lake County Emergency Management Agency (LCEMA) and municipalities are responsible for protecting lives and property from flood hazards. However, municipal EMA programs are responsible for situations within their corporate boundaries. LCEMA has a countywide coordination role while SMC has volunteered to prepare a flood response program for incorporation into the Lake County Emergency Operations and Preparedness Plan. SMC supports all these initiatives but does not take a primary responsibility role in their implementation.

SMC should prepare the "Flood Annex" for the Lake County Emergency Operations and Preparedness Plan as well as flood response training programs and materials. SMC's expertise and interjurisdictional role make it an ideal candidate to develop a more proactive and effective flood response plan for Lake County.

4.2.3.3.2 Flood Event Response
Flood event response involves development of an early warning system and flood response actions to prevent or reduce damage or injury. LCEMA, LCDOT, townships, municipalities/county, SMC, disaster assistance organizations, IEMA, FEMA, and the Corps are some of the organizations responsible for flood event response depending on the extent and severity of the disaster.

SMC should facilitate a workshop with the other flood event response organizations in Lake County to define the roles of SMC and other organizations in flood response. SMC should evaluate the feasibility of development of an early flood warning system for the county. Early flood warning may include real-time interpretation of gauge data to predict potential flooding. It may also include responsibilities and procedures for early flood warning notification. SMC should not assume the responsibility of local jurisdictions for flood event response.

4.2.3.3.3 Post Flood Recovery
Specific flood recovery and clean-up actions and responsibilities should be identified in the "Flood Annex" that is to be prepared by SMC in partnership with LCEMA. SMC is best suited to coordinate flood damage reporting across the county, but local communities must have primary responsibility for reporting post flood disaster damages. Local communities may wish to develop mutual aid agreements to provide building inspectors to assist with post-flood damage assessments. Training programs may also be needed for building inspectors on using FEMA's Residential Substantial Damage Estimation Program. ***SMC should prepare technical guidance to standardize flood damage reporting that is done by local communities. SMC should assist local communities in developing mutual aid agreements for disaster response and should sponsor or coordinate training for conducting post-flood inspections.***

SMC should also establish a Flood Hazard Task Force for post-flood recovery decision-making, especially related to funding priorities.

4.2.3.4 GIS Development

Lake County Management Services Department has primary responsibility for GIS development in the county. However, SMC supports this function in several different areas and in some areas, is better suited to meet the stormwater management GIS needs of the county. SMC has in-house use of all related GIS data currently housed at the county building and SMC should continue to retain access to this data. SMC should also become proficient with more advanced modeling tools such as 3-D Watershed Analysis and Geostatistical Surface Modeling.

4.2.3.4.1 Data Collection

SMC is responsible for developing GIS layers for stormwater related data (waterways, watersheds, etc.) that are used in the overall stormwater management program. Progress has been made on layer development, but is currently a secondary priority and is only accomplished in support of other project initiatives. SMC should continue to utilize data collected by SMC staff from the Global Positioning System (GPS). ***SMC should increase efforts to compile GIS data that is in demand by engineers, municipalities and planners. This would involve development of a data/GIS needs assessment to determine what kind of information is required and then the necessary steps to acquire the data.***

4.2.3.4.2 Information Distribution

Currently, Lake County Management Services Department handles all requests for the distribution of GIS information and data in order to maintain quality control. However, stormwater management activities by municipalities, developers and engineers demand the need for up-to-date and timely delivery of data. SMC can efficiently assist in the maintenance and distribution of stormwater-related data and information. ***SMC should establish an agreement with Lake County Management Services to distribute stormwater-related data directly to engineers, municipalities and planners.*** This will improve efficiency and better serve the public.

4.2.3.5 Floodplain Mapping/Management

Currently, FEMA manages the National Flood Insurance Program (NFIP) and provides Flood Insurance Rate Maps (FIRM) that delineate base flood elevations and flood risk zones. Although the information provided by FEMA is the official regulatory information, it often does not reflect the most current and best available information and is not often available in a timely manner. However, SMC has often reviewed or participated in the development of the most recent floodplain information and has direct access to this information. ***SMC should become a Cooperating Technical Partner (CTP) with FEMA. SMC should prepare regulatory NFIP floodplain maps based on the analyses and maps prepared for the watershed plans. Mapping parameters should be coordinated with other agencies so that the data have the greatest possible use. Depressional floodplain areas should also be compiled and included on the regulatory floodplain maps. SMC should assume responsibility for maintaining the County's NFIP maps. SMC should also perform reviews of Letter of Map Amendment (LOMA) and Letter of Map Revision (LOMR) reviews under the CTP Program.*** This will streamline coordination of the county's NFIP activities. FEMA maps utilize outdated hydrology and hydraulics and mapping. SMC can often provide more useful and up-to-date information to users if sufficient resources are obtained.

4.2.3.6 Non-Regulatory Wetland Program

Consultants primarily, and to some extent, the Corps, and Lake County have historically

provided wetland delineation services to private property owners to define the limits of jurisdictional wetlands. However, SMC and the County (in unincorporated areas) can provide this service to reduce the financial burden to small private property owners that may wish to pursue a small project that requires permitting. This assistance will facilitate effective implementation of the WDO and protect isolated wetlands. ***SMC should offer wetland delineation services for small private property owners.***

4.2.3.7 NPDES Phase II

The USEPA Storm Water Phase II Final Rule applies to operators of "regulated small" municipal separate storm sewer systems (MS4s). Operators of MS4s may include local jurisdictions, State departments of transportation, universities, hospitals, military bases and prisons. Small MS4s may be designated as a "regulated small MS4" in one of three ways: (1) They are located within the boundaries of a Bureau of the Census-delineated "urbanized area", (2) the NPDES permitting authority must evaluate each MS4 that serves a population of at least 10,000 with a population density of at least 1000 people/square mile and potentially designate it into the program, or (3) the small MS4 contributes substantially to the pollutant loadings of a physically interconnected MS4 that is permitted by the NPDES stormwater program.

Regulated small MS4s must to establish a program with the following six components:

- Public Involvement
- Public Education
- Post Development Runoff Control
- Construction Runoff Control
- Good housekeeping/pollution prevention
- Illicit Discharge Identification and Elimination

Municipalities, the county, townships, drainage districts, LCDOT and others are all involved or covered by this regulation which become effective in December 2002. Many of the aspects of this program are common to nearly all of the communities or jurisdictions in the county and could realize significant efficiencies from a coordinated, countywide approach. ***SMC should provide significant support to local jurisdictions as a Local Qualifying Program.***

SMC should facilitate the following components:

- Public Involvement
- Public Education
- Post Development Runoff Control
- Construction Runoff Control

SMC should also provide technical guidance for good housekeeping/pollution prevention and illicit discharge management, which can then be implemented by municipalities and the county at the local level.

4.2.3.8 Drainage Problem Resolutions

4.2.3.8.1 Parcel Drainage Problem Resolutions

This activity addresses and resolves drainage problems at the parcel level, not involving a WDO violation. Municipalities, the county, homeowners' associations, and townships attempt to respond to problems and complaints from their constituencies and requests from local officials. Municipalities and the county take primary responsibility except when the municipal staff are not available or request assistance from SMC. ***In cases where the local municipal staff need outside expertise to resolve the problem, SMC should provide assistance upon request.*** This is not part of the original SMC role and is not practical at a countywide level but is a necessary service. Local governments should increase efforts to allocate resources toward this countywide need. ***No change is recommended for SMC's role in parcel drainage problem resolution***.

4.2.3.8.2 Local Drainage Problem Resolutions
This activity involves resolution of drainage problems at the local or subdivision level. Municipalities, the county, and township highway commissioners are typically involved in this process. Municipalities are responsible if the problem is confined within its boundaries. Local governments should increase efforts to allocate resources toward this countywide need. ***SMC should take responsibility for resolution if the problem is interjurisdictional or involves a WDO violation in a non-certified community. No change is recommended for SMC's role in local drainage problem resolution.***

4.2.3.8.3 Subwatershed or Regional Drainage Problem Resolutions
Subwatershed or regional drainage problem resolution involves multi-jurisdictional problems or solutions, or problems that have been referred to SMC by another agency. With the exception of the Corps of Engineers and the Illinois Department of Natural Resources-Office of Water Resources, SMC is the only entity with authority and expertise to address these types of problems. ***SMC takes responsibility for resolution of these problems and should continue in this role. No change is recommended for SMC's role in resolution of subwatershed or regional problems.***

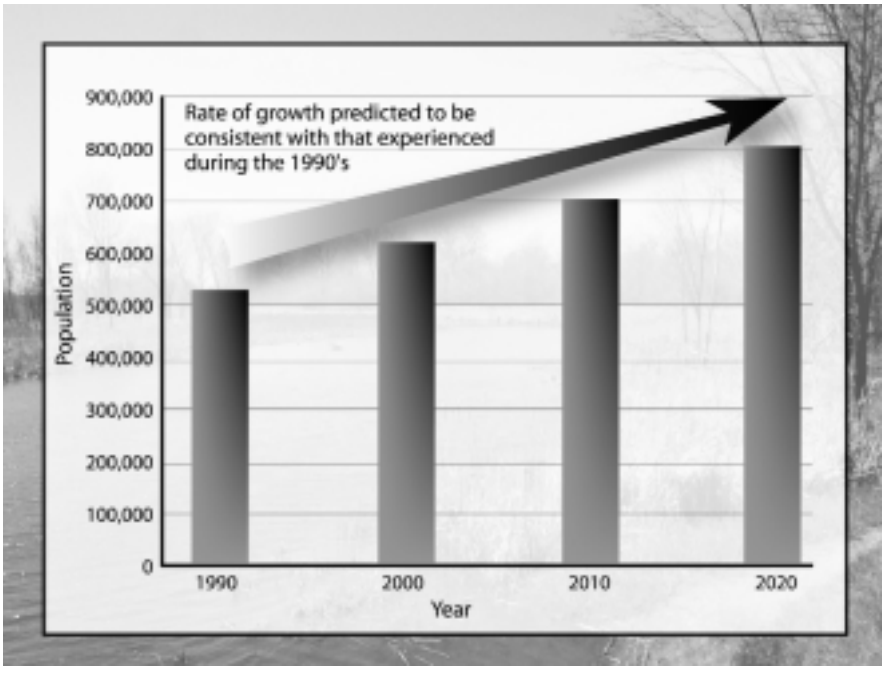
4.2.3.9 CIRS
SMC's Citizen Inquiry Response System (CIRS) addresses and tracks resolutions or referrals of citizens' drainage and flooding problems. SMC has implemented this program to document drainage and flooding problems. It is a valuable tool for responding to citizen needs and allows for direct public involvement with the stormwater management program. Tracking of the drainage problems using the GIS system would increase the value of the information that is collected through CIRS. The CIRS provides a valuable and highly visible service that is most effectively provided by SMC. ***SMC should maintain its CIRS program and expand it to meet the growth of population and housing in the county. SMC should also strengthen and formalize its ties to those entities that receive the referrals. SMC should develop a GIS-based tracking system for the information received through CIRS.***

4.2.4 Regulatory

The regulatory function involves the development and enforcement of regulations to control stormwater runoff. Permitting, inspection and enforcement programs should be continued in support of the Watershed Development Ordinance (WDO).

The level of effort required to meet future regulatory needs will be dependent on the future rate of land development throughout the county. This Lake County growth rate can be estimated from population projections. According to the

Figure 4-1: Population Growth in Lake County



O'Hare Airport expansion scenario forecasts, NIPC projected the population of Lake County for the year 2020 to be 806,779 people, a 25% increase from the 644,346 in 2000. Figure 4-1 shows the historical and predicted growth in population from 1990 through 2020. The predicted growth is expected to continue at approximately the same rate that was experienced during the 1990's.

At this time, the average rate of new development is not expected to accelerate over the next ten years to twenty years. The variable nature of development may result in an accelerated growth during some periods. The current staffing level will require expansion if the future development rate accelerates or if communities decide not to recertify, thus, shifting permit review efforts to SMC. Regulatory efforts should be expanded to address new requirements imposed by SMC or by state and federal agencies. Additional inspection and enforcement are needed to ensure that the new isolated wetland requirements of the WDO are being implemented. SMC should also pursue delegation of wetland permitting authority from the Corps of Engineers to streamline all wetland permits in the county. Additional efforts will be also needed to perform this service.

4.2.4.1 Permit Process

The Permit Process involves the review and processing of Watershed Development Permit applications. The standard provisions of the WDO are permitted by SMC and the certified communities within their respective jurisdictions. Permits are currently processed on a first-come first-serve basis. SMC should investigate the feasibility of developing a permit prioritization system that would accelerate the review time for certain applications (such as minor activities at residential properties). Special circumstance permit applications involving public road projects, LCFPD projects, local government projects in the floodplain, interjurisdictional projects, base flood elevation (BFE) determinations, changes to the BFE or floodway are forwarded to SMC. ***SMC should continue to administer the WDO for non-certified communities and for special circumstance permits.*** Applications requiring isolated wetland review must also be forwarded to SMC unless the community is specifically certified to perform this review. Currently, only four jurisdictions have applied to be certified for isolated wetland review. ***Thus, SMC must increase its resources to provide isolated wetland services for a majority of the county's jurisdictions.***

4.2.4.2 Inspection Services

Similar to the permit process, site inspections of developments that have been permitted under the WDO are conducted by SMC and the certified communities within their respective jurisdictions. SMC should expand inspection services to account for existing and future wetland permit reviews. ***Additional resources are necessary for inspection services.***

4.2.4.3 Enforcement Actions

Enforcement actions for violations of the WDO are also handled by SMC and certified communities. The provisions of the WDO are enforced by SMC and the certified communities within their respective jurisdictions. Enforcement actions are conducted on an as-needed basis. ***SMC needs to develop internal policies and procedures on enforcement and obtain enhanced support from the State's Attorney Office and the court system.***

4.2.4.4 Regulatory Technical Assistance

SMC provides technical assistance for implementation of the WDO and for a Watershed Development Permit. SMC also provides on-going assistance to the certified communities for implementation of the WDO. These activities are conducted on an as-needed basis. It would be useful to develop an "Enforcement Officer

Toolbox" that would have the basic information that a community enforcement officer needs. ***No increase in the resources needed to provide regulatory technical assistance is anticipated.***

4.2.4.5 Ordinance/Technical Reference Manual Updates

SMC updates the WDO and Technical Reference Manual (TRM) as needed. The Technical Advisory Committee (TAC) was established to provide technical guidance to SMC. Recent revisions to the WDO were completed and TRM revisions are ongoing. A running list of suggested WDO changes is maintained and the WDO amendment process (a substantial effort) is initiated when a sufficient number of potential amendments have been prepared. Future WDO changes may be necessary to maintain compliance with all state and federal laws and to best serve the interests the county. As part of ongoing efforts, the WDO and TRM will be automated as web-based documents and provided on the SMC website. ***No increase in resources or effort from current levels is anticipated.***

4.2.4.6 Wetland Permitting Authority

The Corps maintains authority for permitting wetlands that fall under its jurisdiction. SMC has adopted WDO amendments to include protection for isolated wetlands and has responsibility for that functional category. ***SMC should expand its services for isolated wetlands based on the new WDO provisions.*** This will provide the opportunity for SMC to best preserve and utilize the wetland resources of the county.

4.2.4.7 NPDES Phase I

The IEPA maintains authority for NPDES Phase I permits including industrial and construction site stormwater permits. Soil erosion and sediment control plans are reviewed according to the four agency agreement. The IEPA will continue to administer the NPDES Phase I program.

4.2.5 Public Information

Public information and education have always been an integral part of SMC's comprehensive stormwater management program. Throughout its history, SMC has made public education and involvement a high priority. In the future, public education and public involvement will be even more important as they are a specific requirement of the USEPA Storm Water NPDES Phase II Final Rule. Public information and education should not only target the general public, but also engineers, developers, contractors, specific sources of non-point pollution, officials, agencies, and municipal/county employees who will be involved in the implementation of the stormwater management program.

4.2.5.1 General Public Education and Information

Support for SMC's stormwater management program has continually increased as the public and local officials have become more informed on the reasons why it is necessary and important. SMC publishes a quarterly newsletter and an annual report and has developed a number of educational pamphlets, Project Fact Sheets, manuals and brochures. SMC also distributes information through media outreach and press releases. A comprehensive web site has been created which provides useful information for a variety of user types (http://www.co.lake.il.us/smc/). ***SMC should continue to implement these existing public education and information programs. These programs should be expanded in support of NPDES Phase II assistance by SMC.***

Responses to countywide questionnaires indicate that SMC must increase awareness of resources and services available to the public. ***SMC should identify target audiences to specifically promote the functions and programs of SMC.*** This will naturally occur if SMC takes an active role in the Phase II NPDES program. A second way to

accomplish this will be to establish direct contact with homeowner associations, citizen groups, schools or other special interests that have established audiences.

4.2.5.2 Technical Training

SMC sponsors seminars, workshops and training for municipal leaders, consultants and the public. Efforts should be increased to develop technical training programs that attract developers and contractors. However, technical training needs will expand with new SMC roles, such as isolated wetland permitting, and potential responsibility to address the Phase II Final Rule. ***SMC should evaluate potential target audiences and should maintain and expand programs of technical training.***

4.2.5.3 Provide Opportunities for Public Input

Public input and involvement will lead to broader public support for the stormwater management program. The goal of public involvement is to involve a diverse cross-section of people who can express concerns, supply ideas and make contributions for stormwater management planning and implementation. SMC has made itself available to the public through its open door policy, monthly Commission meetings, and watershed planning stakeholder committees.

SMC should expand the public involvement program as watershed planning, project planning and program implementation efforts increase. Future activities envisioned for SMC will require greater public involvement as the overall stormwater management program in Lake County grows. Watershed planning efforts should continue to include public meetings or citizen panels for consensus building. SMC should target underrepresented populations, such as flood victims and business owners, and reach out to obtain their input on desired services.

4.2.6 Maintenance

Maintenance activities include routine maintenance as well as restoration and rehabilitative projects, and are intended to maintain and restore the existing stormwater drainage system within the county. SMC currently has no significant role in drainage system maintenance, with this responsibility resting with the responsible jurisdiction and private and public landowners.

Maintenance is required on all drainage system components across the county. Few municipalities have comprehensive, systematic maintenance programs in place. Maintenance is done on an as-needed basis, typically only after failures have occurred. There is an overwhelming need for a comprehensive maintenance program at all levels and for all components of the drainage system.

4.2.6.1 Restoration and Rehabilitative Projects

These projects include restoration of streambanks and rehabilitation of conveyance systems and detention facilities. SMC, municipalities, the county, drainage districts and homeowners associations have responsibility for these projects. Maintenance is linked to local ownership or jurisdiction, unless by a special agreement.

The level of service is lacking and must be enhanced because of the direct impact on flooding and water quality. Restoration and rehabilitative projects are non-recurring projects that are similar to capital improvement projects in the level of planning, design and construction needed for implementation. ***SMC should identify the priority restoration and rehabilitation needs as part of the countywide maintenance program.*** Once project planning has been completed, projects should be implemented as part of the countywide maintenance program. ***This program should be developed and managed by SMC staff.*** However, maintenance should still be performed by the local jurisdiction.

4.2.6.2 Routine Maintenance

Routine inspection and maintenance of stormwater drainage facilities is needed. These facilities typically include constructed conveyance structures such as catch basins, manholes, storm sewers, ditches and swales and detention basins. Maintenance may also be provided for source controls to prevent premature sedimentation of catch basins or detention basins. As development of the county is expected to continue at its recent pace, the number of stormwater facilities to be maintained is ever increasing. Inspection and maintenance of these facilities will ensure proper operation for maximizing flood control and water quality benefits. A comprehensive program is required to address the maintenance needs of the county. Additionally, a new, dedicated source of funding for maintenance is required for all jurisdictions in Lake County to begin a comprehensive and effective maintenance program.

4.2.6.2.1 Maintenance Program Management

SMC is best suited to develop a drainage system maintenance plan for implementation with local partners throughout the county. The countywide stormwater maintenance program should be accompanied by a manual of practices for drainage system components throughout the county.

The maintenance program should establish standards for stormwater maintenance at local and interjurisdictional levels, define costs, and identify the responsibility for performing these maintenance tasks. The maintenance program and manual of practices should include the full range of activities including maintenance of detention basins, grass swales, catch basins, storm sewers, manholes, culverts, bridges, roadside ditches and natural channels.

The countywide stormwater maintenance program should be developed and managed by SMC in cooperation with local partners. Local partners must be responsible for implementing the maintenance at the local level. Partners will include local jurisdictions responsible for maintenance such as municipalities, the county, the Fox Waterway Agency, drainage districts, townships, LCDOT, LCFPD and others.

Substantial funding will be needed for implementation of the countywide stormwater management program and a dedicated revenue stream is needed. ***SMC should always seek additional funding sources to generate revenue for implementation of the maintenance plan. SMC should manage the distribution of these funds and sponsor or coordinate trunk system and interjurisdictional maintenance activities.***

4.2.6.2.2 Maintenance of Regional Drainage System Components

Regional Drainage System Maintenance has been defined to include drainage system components with greater than 100 acres of tributary area and that involve more than one jurisdiction. The Fox Waterway Agency, drainage districts, municipalities, the county, townships, LCDOT, and LCFPD are all responsible for maintenance within their jurisdictions. Some of these drainage components may have in excess of 100 tributary acres and often involve interjurisdictional issues. ***SMC should sponsor or coordinate interjurisdictional or regional maintenance issues. SMC should also be responsible for maintenance of future regional facilities that serve multi-jurisdictional areas.*** Current maintenance is deficient and needs substantial improvement. SMC must have funding for implementation and collaboration with local partners throughout the county.

4.2.6.2.3 Maintenance of Local Drainage System Components

Local drainage system components are defined as those components with less than 100 acres of

tributary area. Municipalities, the county and property owners are responsible for the maintenance of these minor drainage systems. Additional maintenance efforts are needed by local jurisdictions. The responsibility for local drainage system maintenance will be at the local level, but entities will need resources or funding to implement. ***SMC should seek funding sources that would support local drainage system maintenance activities.***

4.2.6.2.4 Operation of Flood Control Facilities
Local agencies generally operate major flood control facilities by agreement with the Corps of Engineers. The Corps of Engineers has constructed three regional flood control facilities on the Chicago River. Maintenance for these facilities is conducted by local jurisdictions as per standard Corps policy. The responsibility for maintenance should remain at the local level, but entities need resources or funding to implement.

4.2.7 Capital Improvement

Capital improvement projects are typically implemented to mitigate and reduce flood damages and to preserve and improve water quality. Planning efforts to solve flooding problems lead to the design and construction of capital improvement projects. Capital improvement projects may involve the construction of flood management and water quality facilities, floodproofing, the acquisition of damaged properties, acquisition of critical components of the natural drainage system, purchase of conservation easements, or a combination of solutions. The Lake County FHMP has identified more than 300 known flood problem areas that affect up to 6000 structures throughout the county. Extensive data was collected to compile this list which relied on past flood claims and damage reports and existing flood studies and mapping. However, in the absence of completed watershed planning for the county, the FHMP provides the most comprehensive summary of flooding problems and the best source of information from which to estimate future capital improvement needs.

As previously described in Flood Damage Reduction Project Planning, several priority levels of flood damages can be defined for the identified problem areas. Watershed planning will greatly assist in further identifying and better defining the project needs in the county. However, it is very likely the majority of the highest priority problem areas have been adequately identified by the FHMP. ***SMC should seek additional funding for the design and implementation of capital improvement projects to solve these most critical flood problems. SMC should continue to seek cost sharing opportunities with IDNR-OWR, NRCS, FEMA and others***. Implementation must address the design, construction services and actual construction of flood solutions in the county.

4.2.7.1 Design
Design follows planning of capital improvement projects, including flood damage reduction, water quality and acquisition projects, and provides the construction plans and specifications for solutions to flooding and other problems. SMC staff perform some design in-house and should outsource the design of major capital improvement projects. ***Design services should be increased to meet capital improvement needs across the county.***

4.2.7.2 Construction Services
Construction services involve the oversight of construction projects to ensure that the project is constructed in accordance with the design plans. SMC staff manages and oversees construction at SMC's limited capital improvement projects. The need for construction services is directly related to capital improvement construction activities. As the implementation of capital improvement projects grows, ***SMC should outsource***

construction services for large capital improvement projects that can be provided more effectively on an as-needed basis by outside consultants.

4.2.7.3 Construction
This includes the actual construction of capital improvements projects. These projects include facilities designed for water quality and flood damage reduction benefits, floodproofing of properties, as well as acquisition of properties subject to flood damage, acquisition of critical components of the natural drainage system, or purchase of conservation easements. SMC selects and contracts with contractors for project construction. ***SMC should increase implementation of capital improvement projects to meet countywide capital improvement needs.***

4.3 SMC Partners in Stormwater Management

SMC approaches all that it does with an awareness to the roles, responsibilities and capabilities of other governmental jurisdictions and agencies in the county. This "Partnership Approach" maximizes the allocation of resources and expertise in the county and ensures consensus among stakeholders. A brief summary of the roles and responsibilities of SMC's partners in stormwater management in Lake County follows.

4.3.1 County Agencies

Lake County Emergency Management Agency (LCEMA)
The LCEMA is primarily responsible for coordinating flood warnings and response activities throughout Lake County. It also plans for and coordinates emergency responses for all natural and technological disasters.

Lake County Planning and Development (P&D) Department
The Lake County P&D has a significant responsibility in formulating and administering county ordinances involving land use and development. It also takes part in long-term land use planning. The Building and Zoning (B&Z) division of the P&D is certified to review the Watershed Development Ordinance permits in unincorporated Lake County, which accounts for approximately 45% of the county's land. The B&Z should address parcel and local level drainage problems in unincorporated Lake County.

Lake County Department of Transportation (LCDOT)
LCDOT is responsible for both flood mitigation and flood event response. It responds to flooding and drainage problems within the right-of-way and aids other agencies with its staff. LCDOT also creates roadway improvement plans, which target chronic flooding areas and drainage problems.

Lake County Health Department (LCHD)
The LCHD responds to various health hazards during and following flood events. It is also responsible for monitoring drinking water supplies, food establishments, beaches and wastewater treatment plants. LCHD performs water quality testing and lakes management.
Lake County Management Services
Lake County Management Services Department has primary responsibility for GIS development in the county. Lake County Management Services should work with SMC to develop a data sharing agreement.

Lake County Public Works (LCPW) Department
The LCPW does not have a formal role in flood event response, but they are responsible for sanitary sewers in unincorporated Lake County. The department also has a maintenance staff that responds to various problems throughout the county.

Lake County Forest Preserve District (LCFPD)
The LCFPD plays a significant role by acquiring

and managing floodplain properties and open space preservation areas. The district also clears debris in the Des Plaines River and actively manages several properties with flood control reservoirs. The LCFPD has a lead role for the restoration of wetlands that may also provide water quality and flood damage reduction benefits.

4.3.2 Local Governments

Drainage Districts
The nine drainage districts in Lake County are responsible for maintaining drainage conveyance in the waterways within their boundaries. They do this by conducting regular maintenance and implementing various improvements.

Townships
Townships throughout Lake County are responsible for flood fighting and flood recovery. They also repair flood damage to township roads and roadside ditches.

Municipalities
The municipalities in Lake County use their police and fire departments to aid in evacuation, rerouting traffic, closing roads, providing protection and cleanup. The municipalities also record flood damages. They are responsible for land use planning. Municipalities should take the lead in addressing parcel and local level drainage problems unless they are interjurisdictional or involve a WDO violation in a non-certified community.

4.3.3 State Agencies

Illinois Emergency Management Agency (IEMA)
The IEMA coordinates flooding and other disaster response and mitigation activities throughout Illinois. The agency also provides training programs, emergency operational support and administers a hazard mitigation grant program.

Illinois Department of Natural Resources - Office of Water Resources (IDNR-OWR)
The Office of Water Resources (OWR) is responsible for flood control and flood damage reduction within the State of Illinois. The various divisions of the OWR regulate construction in channels/floodplains, reviewing regulatory compliance, issuing dam safety permits, makes recommendations for mitigation projects and provides assistance for channel/floodplain maintenance.

Illinois Environmental Protection Agency (IEPA)
The IEPA is responsible the protection of water quality and oversees a number of programs including the statewide implementation of the NPDES Phase I and Phase II Programs. IEPA also provides water quality certifications pursuant to Section 401 of the Clean Water Act.

Northeastern Illinois Planning Commission (NIPC)
NIPC plays a key role in regional policy planning. NIPC provides valuable technical assistance to other agencies, municipalities, and grassroots organizations.

4.3.4 Federal Agencies

Federal Emergency Management Agency (FEMA)
FEMA is the lead federal agency responsible for aiding in the response and mitigation of floods and other disasters. The Federal Insurance & Mitigation Division is responsible for coordinating the National Flood Insurance Program (NFIP) and the Community Rating System (CRS) with local communities. The Readiness, Response & Recovery Division responds to disaster damage when they have been declared a disaster area.

United States Army Corps of Engineers (USACE)
The USACE is the lead federal agency responsible for flood fighting and flood control. They are responsible for the following areas: regulatory authority over wetlands and

waterways; flood reduction studies and projects; and emergency response.

United States Geological Survey (USGS)
USGS currently operates system of rain gauges and stream gauges through joint program with SMC.

4.3.5 Private Organizations

Red Cross
The Red Cross responds to all natural disasters and distributes various guidance resources on flood response and recovery and other disaster topics.

Non-Profit Organizations
Non-profit organizations play a role in acquiring properties for restoration and preservation efforts. Non-profits organizations may also contribute to local planning efforts, implement restoration projects, or sponsor other stormwater management activities.

4.4 Summary of SMC Roles and Responsibilities

This section of the Comprehensive Plan 2002 has presented the future vision of SMC in terms of its roles and responsibilities in various functional categories of its stormwater management program. The following table presents a summary of the development and definition of SMC's role. The table presents each functional program element, what it is, who is responsible for it at the present time, why it is done this way, how it should be done and why, and, what the expanded role or enhanced SMC services should consist of. The future role of SMC defined in this section will be used to estimate a future SMC program cost in Section 5.

Program Elements	What is it?	Who is taking an active role?	What is being done?	How Should it be done?	Why?	Expanded and/ or Enhanced Services
1. Administration	Human resources, office management, staff training, internal communication, financial management, commission support.	SMC	Internal activities to run, maintain and manage the organization, its staff and the physical office. Coordinate with county government and support the Commission Board. Career development and training of staff.	Expand as needed to support increased staff size. Also expand to administer alternative funding mechanism, if and when enacted.	Additional staff and alternative funding mechanism will create additional administrative responsibilities.	Pursue and administer alternative funding mechanisms
2. Planning Services						
2.1 Watershed/ Subwatershed Planning	Comprehensive planning for 26 subwatersheds that comprise the 4 major watersheds in Lake County.	SMC within Lake County, in cooperation when outside	SMC is the only agency pursuing the preparation of comprehensive subwatershed management plans throughout the four Lake County watersheds. Grassroots organizations and Municipalities/County have contributed to individual or partial subwatershed planning efforts.	SMC should manage and direct all subwatershed and watershed planning efforts in the county. However, progress has been limited by lack of funding.	Development of subwatershed plans is one of the founding missions of the SMC and is critical to effective stormwater management and drainage reduction.	SMC should complete and adopt 23 remaining subwatershed plans.
2.2 Regional Planning	Planning efforts that involve areas outside of Lake County.	SMC, Corps, IEPA, IDNR, NIPC	Corps and IEPA have statewide or regional jurisdiction and authority. The Corps leads regional flood control/restoration efforts. IEPA leads regional water quality efforts. SMC supports and collaborates with these agencies. NIPC role is in policy planning.	No change		
2.3 Institutional Planning	Planning SMC's program and services.	SMC	Function directly related to defining SMC's program and services.	No change		
2.4 Project Planning (excluding development)						
2.4.1 Flood Damage Reduction Projects	Projects primarily focused on flood control and flood hazard mitigation such as detention storage, conveyance improvements, floodproofing and buyouts.	SMC, Corps, IDNR, FEMA, municipalities, Lake County	Flood damage prevention and reduction is a primary reason for county-wide stormwater management enabling legislation. The Corps and IDNR have authority when damages warrant and funding is available. SMC is forming an interagency flood mitigation committee to implement county-wide flood hazard mitigation plan.	Should be a primary responsibility of SMC. Corps & IDNR coordinate their efforts when they are accessible. SMC should establish action plan to implement flood control projects that have been limited by lack of funding.	SMC understands local interests and priorities and can provide this service most effectively.	SMC should develop system for project prioritization and action plan to plan and implement projects that have been limited by lack of funding.

Program Elements	What is it?	Who is taking an active role?	What is being done?	How Should it be done?	Why?	Expanded and/ or Enhanced Services
2.4.2 Water Quality Projects	Water quality projects include erosion control projects, detention basin retrofits, and BMP implementation.	SMC, Municipalities/ County, Grassroots organizations, Lake County Forest Preserve District (LCFPD), Lake County Health Department (LCHD)	SMC has secured various funds for water quality projects. Municipalities/county and grassroots organizations may do water quality projects to achieve local benefits and if funding is available. Lake County Health Department performs lakes management.	Should be a primary responsibility of SMC. Cooperate/collaborate with others. SMC should implement water quality projects that have been limited by lack of funding.	Municipalities/ County and grassroots organizations should coordinate with SMC.	SMC should develop county-wide water quality strategy and implement projects that have been limited by lack of funding.
2.4.3 Wetland Projects	Wetland restoration and wetland banking projects.	SMC, LCFPD, private companies and non-profit organizations.	SMC has investigated potential benefits of wetlands projects and are planning wetland restoration and banking projects. LCFPD and others perform wetland restoration and wetland banking projects.	Should be a primary responsibility. Collaborates with LCFPD, Townships, municipalities and others for maximizing wetland functions. Natural wetland protection efforts to be led by others.	Wetland projects are major components of effective flood and water quality management. Responsibility by SMC will ensure flood control and water quality benefits are achieved. Efforts by others alone are limited and often have single purpose objectives.	SMC should develop a wetland preservation plan relative to accomplishing its mission to include potential banking opportunities.
2.4.4 Restoration and Rehabilitative Projects	Planning drainage system restoration and rehabilitative projects. Restoration projects restore waterways to natural condition. Rehabilitative projects are to fix/repair drainage systems - return to design conditions - usually man-made.	SMC, Municipalities/ County, grassroots organizations, Township Highway Commissioners, drainage districts.	Drainage system restoration and rehabilitation projects may be planned as a result of watershed planning recommendations or by municipalities/county or citizens with a direct interest in the project. Townships restore roadside ditches.	SMC takes primary responsibility on the major interjurisdictional trunk system. Other organizations can contribute when possible.	SMC best understands watershed needs and impacts and can package into multi-objective solutions. SMC is also best suited to recognize the need for capacity preservation/ restoration.	SMC should develop a restoration and rehabilitation plan as part of the county-wide maintenance program. Also plan and implement projects that have been limited by lack of funding

Program Elements	What is it?	Who is taking an active role?	What is being done?	How Should it be done?	Why?	Expanded and/ or Enhanced Services
3. Engineering Services						
3.1 Non-Regulatory Technical Assistance	Review and comment on work products from other agencies, municipalities/county or grassroots organizations; respond to technical questions; provide technical support for parallel initiatives by other agencies.	SMC, SWCD, NRCS, NIPC	Public service provided by agencies' staff with expertise in subject area.	Expand support to other agencies and grassroots organizations.	No other readily available resource for technical assistance at the local level.	SMC should expand this service in order to provide higher level of support to other agencies that have some of these responsibilities.
3.2 Rain Gauge/Stream Gauge Network	Operation and maintenance of rain and stream gauges in Lake County.	SMC, USGS, local partners	Joint program between SMC and USGS. SMC currently operates nine rain gauges, USGS operates both rain gauges and stream gauges.	Enhance rain gauge coverage as USGS scales back. Obtain maintenance and operation responsibilities for stream gauges as USGS scales back.	SMC Plans to add up to ten more rain gauges over the next five years. USGS has reduced the number of gauges it is supporting. SMC is best suited to coordinate operation of the gauge system within the county.	SMC should continue to support and expand the network to meet future needs.
3.3 Flood Event Response						
3.3.1 Emergency Action Planning	Preparation of emergency response plans and training of personnel.	SMC, Lake County Emergency Management Agency (LCEMA), Municipalities	Each unit of local government is responsible for protecting lives and property from flood hazards. Municipal EMA programs are responsible for situations within their corporate boundaries. LCEMA has a county-wide coordination role. SMC has volunteered to prepare a flood response program for incorporation into the Lake County Emergency Operations and Preparedness Plan.	"Flood Annex" should be Lake County Emergency Operations and Preparedness Plan. Training programs or materials on flood response should be prepared by SMC.	SMC's expertise and interjurisdictional role make it ideal candidate to develop a more proactive flood response plan for Lake County. LCEMA has responsibility to coordinate planning efforts of various Municipalities/County.	SMC should prepare Flood Annex and training program.

Program Elements	What is it?	Who is taking an active role?	What is being done?	How Should it be done?	Why?	Expanded and/ or Enhanced Services
3.3.2 Flood Event Response	Warning system and actions to prevent or reduce damage or injury.	LCEMA, LCDOT, Townships, Municipalities/ County, SMC, disaster assistance organizations, IEMA, FEMA, Corps	Depending on the extent and severity of the disaster, there are many organizations responsible for flood event response. LCEMA has coordination responsibilities.	Municipalities/County have primary responsibility. SMC's role should be expanded and defined in relation to flood event response.	SMC should not assume responsibility of local jurisdiction and does not have the resources to replace the function of local jurisdictions. However, SMC should have a defined role in flood event response.	SMC should define and prepare for its role in flood response. SMC should participate in the development of an early flood warning system for the county.
3.3.3 Post-flood Recovery	Maintenance of health and safety and flood clean up. Damage assessment. Identify opportunities for hazard mitigation activities and projects.	Townships, LCHD, LCEMA, Municipalities/ County, SMC	Recovery responsibilities are also spread across many agencies depending on the extent and severity of the disaster.	SMC should provide technical guidance. SMC should also assist communities in developing mutual aid agreements. Specific flood recovery and clean up actions should be identified in the "Flood Annex" that is to be prepared. SMC should standardize flood damage reporting following flood events. Also, SMC should work with LCEMA to organize and staff a permanent Flood Hazard Task Force for post-flood recovery decision making.	SMC is best suited to coordinate flood damage reporting across the county, but local communities must have primary responsibility for reporting and past flood disaster assistance.	SMC should prepare technical guidance to standardize flood damage reporting. Organize and establish Flood Hazard Task Force.
3.4 GIS Development						
3.4.1 Data collection	Development of data for GIS layers	Lake County, SMC	SMC is responsible for developing GIS layers for stormwater related data (waterways, watersheds, etc.) However, data development occurs on limited basis as secondary product of other SMC projects.	No change. However, data collection effort is limited.	Although no change in responsibility, SMC should increase efforts to compile GIS data and implement analytical tools.	SMC should increase data collection efforts to create GIS layers for stream inventories, watersheds, and stormwater facilities.

Program Elements	What is it?	Who is taking an active role?	What is being done?	How Should it be done?	Why?	Expanded and/ or Enhanced Services
3.4.2 Information Distribution	Distribution of GIS data to the public	Lake County	Lake County handles all requests for the distribution of data in order to maintain quality control.	SMC should distribute stormwater-related data.	SMC can increase efforts to provide specific information.	SMC should distribute stormwater-related data.
3.4.3 System Management	Management of the county-wide GIS system	Lake County	Lake County has taken the lead on the maintenance of the county-wide GIS system.	No change	Lake County is better suited to manage the GIS.	
3.5 Floodplain Mapping/Management	Coordination of floodplain studies and preparation and maintenance of floodplain data and maps	FEMA, SMC	FEMA manages the National Flood Insurance Program (NFIP) and provides Flood Insurance Rate Maps (FIRM) that delineate base flood elevations and flood risk zones. Many organizations within the county have these maps on file. SMC conducts concurrent community assistance visits with NFIP compliance audits.	SMC should become a CTP with FEMA to assume responsibility for coordinating the county's NFIP maps and mapping responsibilities. SMC should review LOMA/LOMR applications. SMC should prepare regulatory floodplain maps based on most up to date information.	FEMA maps may utilize outdated hydrology and hydraulics and mapping. SMC can provide more useful and up-to-date information to users.	SMC should conduct the county's NFIP mapping activities including LOMA/LOMR reviews. Prepare regulatory floodplain maps.
3.6 Non-Regulatory Wetland Program	Offer wetland delineations for private property owners	SMC, consultants, Corps, County (in unincorporated)	Service historically provided by consultants.	SMC should offer to perform wetland delineations for single family homeowners or owners of small private property.	SMC has identified a pressing need for assistance in wetland delineations to property owners in the County. This assistance will facilitate effective implementation of the WDO and protect isolated wetlands.	SMC should provide select wetland services.

Program Elements	What is it?	Who is taking an active role?	What is being done?	How Should it be done?	Why?	Expanded and/ or Enhanced Services
3.7 NPDES Phase II	New federal clean water rules that require: ◆ Public involvement ◆ Public education ◆ Post development runoff control ◆ Construction runoff control ◆ Good housekeeping/ pollution prevention ◆ Illicit discharge identification and elimination	Municipalities/ County, Townships, Drainage Districts, LCDOT and others	Not yet being done according to EPA timeline. SMC could perhaps sponsor a county-wide general permit to capitalize on work in progress and cost efficiencies.	SMC should facilitate certain components for the county: ◆ Public involvement ◆ Public education ◆ Post-development runoff control ◆ Construction runoff control SMC should provide assistance by preparing guidance on good housekeeping/pollution prevention and illicit discharge management, which should then be implemented by municipalities/county. SMC should provide significant support to local jurisdictions as a Local Qualifying Program.	SMC can effectively assist on four components; remaining two are best done locally.	SMC should prepare guidance for good housekeeping and illicit connections for use by locals. SMC should provide technical assistance and support for the other four components of Phase II. SMC provide support as a Local Qualifying Program.
3.8 Drainage Problem Resolutions						
3.8.1 Parcel Drainage Problem Resolution	Drainage problem at parcel level, not involving WDO violation.	Municipalities/ County, Homeowners' associations, Townships	Service agencies such as municipalities and the county respond to problems and complaints from constituency and requests from local officials.	Municipalities/County take primary responsibility. Exception may be when municipal staff require outside expertise.	Not part of original SMC role. A primary SMC role that is not practical at a county-wide level.	
3.8.2 Local Drainage Problem Resolution	Drainage problem at local or subdivision level.	Municipalities/ County, Township Highway Commissioners, SMC	Municipalities are responsible if problem is confined, SMC becomes responsible if problem is interjurisdictional or involves a WDO violation in a non-certified community.	No change		
3.8.3 Subwatershed or Regional Drainage Problem Resolution	Drainage problem at subwatershed or regional scale, referral by another agency.	SMC, Municipalities/ County	SMC is best suited to address problems of this scale.	No change		

Program Elements	What is it?	Who is taking an active role?	What is being done?	How Should it be done?	Why?	Expanded and/ or Enhanced Services
3.9 CIRS	Citizen Inquiry Response System addresses and tracks resolution of citizens' drainage and flooding problems.	SMC	SMC has implemented this program to document drainage and flooding problems. It is a valuable tool for responding to citizen needs. If problem resolution is not the responsibility of SMC, citizens can be redirected to the appropriate entity.	Continue program and adjust as county grows, develop GIS-tracking system.	Although a considerable effort, the CIRS provides a valuable and highly visible service that is most effectively provided by SMC.	Expand as needed based on county growth and develop GIS-tracking system.
4. Regulatory						Future expansion may be needed for all regulatory program elements based on county growth.
4.1 Permit Process	Review and processing of Watershed Development Permit applications	SMC, certified communities	The provisions of the WDO are permitted by SMC and the certified communities within their respective jurisdictions. Special circumstance applications are forwarded to SMC.	No change		Expand for wetlands permitting.
4.2 Inspection Services	Site Inspections for conformance with permitted conditions.	SMC, certified communities	Site inspections of developments that have been permitted under the WDO are conducted by SMC and the certified communities within their respective jurisdictions.	Additional efforts needed to ensure requirements of WDO are being implemented.	Isolated wetlands permitting and future delegation of wetlands permitting will expand this role.	Expand for wetlands permitting.
4.3 Enforcement Actions	Enforcement actions for violations of the WDO	SMC, certified communities	The provisions of the WDO are enforced by SMC and the certified communities within their respective jurisdictions.	SMC should develop internal policies and procedures on enforcement. Obtain enhanced support from the State's Attorney Office and the court system.	Enforcement actions must be clearly defined and receive state support.	Expand for wetlands permitting and enhanced state support.
4.4 Regulatory Technical Assistance	Technical assistance for implementation of the WDO	SMC, certified communities	SMC and certified communities provide technical assistance to applicants for a Watershed Development Permit. SMC also provides on-going assistance to the certified communities for implementation of the WDO.	No change		Expand for wetlands permitting.

Program Elements	What is it?	Who is taking an active role?	What is being done?	How Should it be done?	Why?	Expanded and/ or Enhanced Services
4.5 Ordinance/ Technical Reference Manual Updates	Updates to the WDO and TRM as needed	SMC/TAC	TAC was established to provide technical guidance to SMC.	No change		
4.6 Wetland Permitting Authority	Jurisdiction determinations and Permitting under Section 404 and the WDO	Corps, SMC, Lake County PBD	Corps maintains authority for permitting of Waters of the U.S., SMC and Lake County PBD perform jurisdictional determinations according to ICA and isolated wetland permitting under the WDO provisions.	Authority to provide jurisdictional determinations and permit isolated wetland impacts should continue. Corps will review all other wetland and waters of US impacts under the Corps general permits program.	The WDO already covers wetlands permits and the ICA was recently put in place.	Continue expanded isolated wetlands program.
4.7 NPDES Phase I	Industrial and construction site stormwater discharge permits	IEPA	IEPA is the organization designated to implement these programs throughout the state.	No change		
5. Public Information						
5.1 General Public Education and Information	Newsletters, pamphlets, manuals and brochures	SMC	SMC has taken the initiative to implement a strong public information program.	No change in responsibility, however, additional effort is required to effectively implement current programs and to follow through on NPDES Phase II requirements. Conduct open houses or forums for public input.	Additional work may be needed to educate the public on the functions and programs of SMC. Responses to county-wide questionnaires indicate that SMC must increase awareness of public education programs already in place.	SMC should provide public involvement and information as a component of NPDES Phase II.
5.2 Technical Training	Seminars, workshops and training for municipal leaders, consultants and the public	SMC, NIPC, SWCD, other agencies	Training provided by agencies with expertise and motivation to develop programs.	Maintain and expand program of technical training	Technical training needs will expand with new SMC roles, including NPDES Phase II and wetlands.	Program should be expanded and enhanced.

Program Elements	What is it?	Who is taking an active role?	What is being done?	How Should it be done?	Why?	Expanded and/ or Enhanced Services
5.3 Provide Opportunities for Public Input	Open door policy, monthly commission meetings, public review and comment, stakeholder committees	SMC	SMC has made itself available to the public through its open door policy and monthly commission meetings at which public comments are solicited. Significant changes to regulations are subject to public review and comment periods. Part of typical project development process.	Additional effort required.	Evolution of public involvement, expected increases in project activities and NPDES Phase II require expanded program and additional effort.	Opportunities for public input should be expanded and enhanced.
6. Maintenance						
6.1 Restoration and Rehabilitative Projects	Restoration of streambanks, rehabilitation of conveyance systems, and detention facilities	SMC, Municipalities/ County, drainage districts, LCFPD, homeowners associations	Maintenance is linked to local ownership or jurisdiction, unless by special agreement.	Priority projects to be identified in watershed plans and by other locals. SMC should take initiator role.	Level of service is lacking and must be enhanced because of direct impact on flooding, water quality, and preservation of natural resources.	SMC should identify restoration and rehabilitation project needs and implement through maintenance program.
6.2 Routine Maintenance						
6.2.1 Maintenance Program Management	Development of a maintenance program and standards for drainage system components throughout the county. Management of the maintenance program.	SMC, Municipalities/ County, Drainage Districts	The 1990 Comprehensive Stormwater Management Plan identified this as an objective for SMC.	Maintenance not to be performed by SMC, but county-wide maintenance program should be developed and managed by SMC.	SMC is best suited to develop a drainage system management plan for implementation with local partners throughout the county.	SMC should prepare a maintenance program including a manual of practices. SMC should manage the county-wide maintenance program.

Program Elements	What is it?	Who is taking an active role?	What is being done?	How Should it be done?	Why?	Expanded and/ or Enhanced Services
6.2.2 Maintenance of regional drainage system components	Maintenance of drainage system components with >100 acres tributary	Fox Waterway Agency, drainage districts, municipalities/ county, townships, LCDOT, LCFPD	These entities are responsible for maintenance within their jurisdictions. Some of these drainage components may have in excess of 100 acres tributary or involve interjurisdictional issues. SMC assists in the coordination of interjurisdictional or regional maintenance issues.	Dedicated revenue stream is needed. Local governments can cooperate with SMC to maintain intra- and interjurisdictional (or trunk) components within boundaries. SMC needs to coordinate maintenance for regional and interjurisdictional facilities.	Current maintenance is deficient and needs substantial improvement. Must have funding for implementation and collaboration with local partners throughout the county.	SMC should acquire additional funding to allow distribution of funds to local partners for maintenance or for implementation of maintenance.
6.2.3 Maintenance of local drainage system components	Maintenance of drainage system components with <100 acres tributary	Municipalities/ County, Township Highway Commissioners, property owners	Municipalities/county and property owners are responsible for the maintenance of minor drainage systems.	Additional maintenance efforts needed by local jurisdictions.	Responsibility for maintenance will be at local level, but entities will need resources or funding to implement.	SMC should seek funding to support maintenance by local jurisdictions.
6.2.4 Operation of flood control facilities	Operation of major flood control facilities	Locals by agreement with Corps	The Corps constructed three regional flood control facilities on the Chicago River. Maintenance by locals as per standard Corps policy.	No change	Responsibility for maintenance will be at local level, but entities need resources or funding to implement.	Yes, for any future regional flood control projects with SMC responsibility.
7. Capital Improvement						
7.1 Design	Design of capital improvement projects for flood damage reduction and water quality (including acquisitions).	SMC, Corps, IDNR	SMC typically outsources the design of capital improvement projects.	No change		Increase design services to meet capital improvement needs across the county.
7.2 Construction Services	Construction management of capital improvement projects.	SMC	SMC staff manages and oversees construction at SMC capital improvement projects.	No change		Increase construction services consistent with construction activities.
7.3 Construction (including acquisitions)	Construction of capital improvement projects or acquisitions.	SMC	SMC selects and contracts with contractors for project construction.	No change		Increase implementation to meet county-wide needs.

Section 5
Future SMC Stormwater Management Program Costs

5.1 Introduction

Section 4 presented the future roles and responsibilities of SMC based on functional categories and sub-categories of the stormwater management program. Municipalities and other agencies have shared responsibilities for stormwater management in Lake County. This section presents the estimated costs for a full service program that would address the countywide stormwater management needs. This future full service program is a comprehensive and advanced program for all of Lake County that will interface with the responsibilities of SMC's partners in stormwater management.

In order to support these necessary full service functions, the costs to deliver the future program will need to increase significantly above the cost of the existing program. In addition to presenting the costs of the full service program for Lake County, this section reviews the costs of other similar programs in the Midwest and makes a recommendation for a realistic cost budget that will be used to develop the action plan for implementation of SMC's stormwater management program.

5.2 Typical Costs for Stormwater Management Programs Based on Level of Service

A stormwater management program must be tailored to serve the goals and interests of a local constituency and to effectively incorporate the unique regulatory and physical characteristics of the service area. There is no universal or recommended program that can be simply copied or adopted by a community. Stormwater management programs are as unique as the communities and areas that they serve. However, even with this variability, there are program-level similarities between existing programs for which typical costs can be developed and compared.

One approach to quantifying the general cost of managing stormwater is to consider the overall program costs in terms of the cost per developed acre per year. Information in Table 5-1 was developed to describe unit costs associated with the level of service provided by typical stormwater programs (Reese, 2000). Lake County has an area of 469 square miles (300,000 acres) and is approximately 63% developed (190,000 developed acres). Based on general ranges of unit stormwater program costs per acre, the table presents a range of potential costs for various levels of stormwater management service in Lake County.

As could be expected, none of the typical programs described in Table 5-1 perfectly represent the current or future SMC stormwater management programs. The $3 to $6 million costs for the "incidental" program generally confirm SMC's current $2.3 million program (supplemented by another $3.3 million dollar program of county capital improvement project and grant monies). The table also indicates that the future full service program costs including substantial maintenance and capital improvements could exceed $29 million. Currently, stormwater maintenance in Lake County is funded by municipalities at various limited levels across the county and is not included in the SMC budget. Whereas the future full service program presented in this section includes a commitment for countywide maintenance that falls outside the responsibility of local jurisdictions.

Table 5-1: Typical Costs of Stormwater Management Programs

Program Level	Program Cost Per Developed Acre Per Year	Typical Program Features	Estimated Annual Cost Based on Developed Acres in Lake County
Incidental	$15-$30	Reactive incidental maintenance, and regulation part of other programs	$3 to $6 Million
Minimum	$30-$60	Incidental program plus right-of-way maintenance, better regulation and inspection, more staff and erosion control.	$6 to $11 Million
Moderate	$60-$90	Minimum program plus additional maintenance programs and levels of service, better regulation and inspection, some planning, minor capital programs and general upgrade of capabilities.	$11 to $17 Million
Advanced	$90-150	Moderate program plus maintenance of the whole system, master planning, regional treatment, some water quality, data collection, multi-objective planning, strong control of development and other programs and utility funding.	$17 to $29 Million
Exceptional	Over $150	Advanced program plus stormwater quality, advanced flood control, advanced levels of service for maintenance, aesthetics become more important, and public programs.	>$29 Million

Source: Reese, 2000

5.3 Typical Costs for Stormwater Management Programs Based on Comparisons to Other Comprehensive Programs

Another way of evaluating general stormwater management program costs is by direct comparison to other similar programs. Table 5-2 presents costs by area and population for similar programs. Information in this table was developed in part by the City of Indianapolis during a planning effort for their future stormwater management program, and supplemented by information acquired by CDM. The jurisdiction and municipalities included on the table were selected for being the most comparable to Lake County. Brief descriptions of the major components of the programs and how they are funded are also included.

As can be seen in Table 5-2, Lake County's 2001 budgeted stormwater program cost is $2.3 million, which translates into annual costs of $3.57 per capita and $7.66 per acre. If projects funded by county capital improvement project monies and grants are included, Lake County's program cost is $5.6 million, or $8.69 per capita and $18.66 per acre. Lake County's program annual costs per capita and per acre are much less than the unit costs for other programs. DuPage County's program costs $11 million annually, which equates to $12.22 per capita and $51.3 per acre. DuPage County has a larger population than Lake County, but covers a smaller area. The average annual costs of the various programs in Table 5-2, excluding Lake County, are $28.81 per capita and $103.31 per acre. If Lake County's stormwater program were based on these averages, the potential annual cost would range from $19 to $31 million.

Table 5-2: Stormwater Program Costs of Selected Jurisdictions

Jurisdiction/ Municipality	Total Costs (Millions)	Population	Area (Sq. Mi.)	Annual Cost per Capita	Annual Cost per Acre	Primary Source of Funding	Major Program Components
Lake County (countywide program)	$ 2.3 M	644,000	469	$3.57	$7.66	Property tax levy	Limited Capital
DuPage County (countywide program)	$ 11 M	900,000	335	$12.22	$51.31	Property tax levy	Capital Improvement Intensive
Columbus (City)	$ 15 M	701,000	211	$21.40	$111.08	User Fees	Maintenance and Capital
Tulsa (City)	$ 9 M	375,000	200	$24.00	$70.31	User Fees	Maintenance Intensive
St. Louis (countywide program)	$ 35 M[1]	1,400,000	520	$25.00	$104.37	Ad valorem taxes; Impervious Charge	Maintenance Intensive; some Capital
Louisville (countywide program)	$ 18 M	650,000	280	$27.69	$100.45	User Fees	Maintenance and Capital
Austin (City)	$ 22 M	750,000	374	$29.33	$91.91	User Fees	Capital Improvement Intensive
Charlotte (City)	$ 31 M	500,000	250	$62.00	$193.75	User Fees	Capital Improvement Intensive

5.4 Cost Development for the Future Full Service SMC Management Program

Costs were developed for each of the categories that comprise the future full service SMC stormwater management program presented in Section 4. Cost development assumed a ten-year planning window for completion of various program elements and initiatives. A ten-year planning horizon was selected based on the desire to produce a ten-year action plan for SMC. However, the actual duration of specific services and initiatives will be based on priorities and budget limitations when developing the action plan in Section 6. The ten-year planning horizon for these costs was utilized to provide a means to incorporate the costs of annual or ongoing services with other "non-recurring" initiatives that may only be provided over a specified time frame. Non-recurring costs have been annualized over a ten-year period for comparison purposes. This approach produces an annual cost of the full service stormwater management program assuming a ten-year time frame for completion.

Costs were estimated for all functional categories and activities of the future full service stormwater management program. Appendix C contains worksheets that detail the assumptions and methodologies used to estimate these costs.

Section 4 presented descriptions of the components of the future full service stormwater management program. In some cases, the future program is not expected to deviate from the current level of service provided by SMC. In these instances, the estimated future cost was simply taken from the current cost for that program element.

The average annual cost to address all countywide needs was estimated to be approximately $44 million. With the exception of engineering services provided by local municipalities, the $44 million represents the cost of providing countywide stormwater management services by all jurisdictions in the county, including SMC. A significant portion of this cost (40%, or $18 million) is for operation and maintenance of the stormwater system at the local level. These operation and maintenance responsibilities lie with the local municipalities or other responsible jurisdictions, and remain their responsibilities. Currently, these operation, management and maintenance needs are either partially funded by local governments or may go unmet. The future full service SMC stormwater management program only includes maintenance of interjurisdictional facilities that may be outside the responsibility of local communities. Subtraction of the local operation and maintenance requirements reduces the expanded SMC-only stormwater program costs to $26 million. However, SMC will continue to seek additional funding opportunities that could support local maintenance efforts.

Table 5-3 presents the estimated annual costs for the future full service SMC stormwater management program. The estimated annual cost of the full service program is approximately **$26 million** per year. These services will be provided by both SMC staff and through "outsourcing". Outsourced services and other non-staff costs are shown in the table as "future direct costs". These services would be provided by consultants, contractors or other jurisdictions using SMC funds.

Staffing requirements are presented as full-time-equivalents (FTEs). The estimated cost for an FTE was based on an average salary including overhead. The full service stormwater management program requires a total SMC staff of approximately 29 FTEs compared to a budgeted staff size of 16 at the beginning of 2001 (increased to 18 at the end of 2001 with the addition of isolated wetland responsibility). This size requirement is based on SMC staff providing those services that have typically been provided by SMC, but also supplemented by a mix of staff and outsourcing responsibility for expanded or new services and initiatives. The cost worksheets in Appendix C document the staff and outsourcing splits for each service.

Two functional areas that make up the majority of the cost of the full service program are Maintenance and Capital Improvements. Both represent substantial increases from the current level of service and current expenditures.

The Maintenance cost is structured to provide stormwater maintenance in areas across the county that are not within local jurisdictions' responsibilities. The future SMC stormwater program cost is estimated at approximately $2 million per year. There is a critical need for maintenance at all levels of the stormwater drainage system across the county. All countywide maintenance needs must be defined and addressed for the overall program to be successful. The cost to address all countywide maintenance needs was estimated to be approximately $20 million. SMC's responsibility for implementing maintenance may be relatively minor in comparison to all countywide needs. However, SMC is the appropriate entity to coordinate a countywide program and may be

able to obtain future funding opportunities for local communities to meet their maintenance needs.

Capital Improvement costs are estimated at $17 million per year. This cost is based on the total cost of approximately $260 million to address the flood damages identified in the Flood Hazard Mitigation Plan, and assuming these problems are resolved over the ten-year planning period. Actual capital improvement costs for each year will be determined based on the program funding level and actual project needs. The $17 million annual cost level is presented to establish the overall cost of the full service stormwater management program.

The estimated future SMC program cost of $26 million is comparable with other stormwater programs presented earlier in this section. This cost is driven primarily by expanded Maintenance and Capital Improvement components. This future level of service may be ideal for completion over a ten-year time frame, but in reality, is limited by the available funding level of the program, which is likely to be significantly less than $26 million per year.

Table 5-3: Estimated Costs for Functions and Activities for the Full Service Program

			Future FTEs	Future Staff Costs	Future Direct Costs	Future Annual Costs[1]	Non-Recurring[2]
		Administration	**5.03**	**$389,000**	**$-**	**$491,000**	
	1.1	Liaison to County Government	0.07	$10,900		$10,900	
	1.2	Human Resources	0.50	$32,200		$43,600	
	1.3	Plant Management	0.16	$7,800		$10,500	
	1.4	PC/Network Support	0.27	$15,800		$21,400	
1	1.5	Internal Communication and Coordination	1.06	$65,500		$88,800	
	1.6	Career Development and Training	0.69	$65,100		$88,200	
	1.7	Financial Management and Purchasing	0.45	$37,900		$51,300	
	1.8	Budget Development and Tracking	0.60	$46,600		$63,100	
	1.9	Commission Support	0.23	$17,100		$23,200	
	1.10	User Fee Administration	1.00	$90,000		$90,000	
		Planning Services	**4.65**	**$450,000**	**$1,133,000**	**$1,582,000**	
	2.1	Watershed Planning	2.06	$185,000	$630,000	$815,000	☑
	2.2	Regional Planning	0.35	$42,400		$42,400	
	2.3	Institutional Planning	0.27	$24,970	$50,000	$74,970	☑
2	2.4.1	Flood Damage Reduction Projects	0.59	$53,400	$213,600	$267,000	✓
	2.4.2	Water Quality Project Planning	0.23	$20,400	$81,600	$102,000	✓
	2.4.3	Wetland Project Planning	1.00	$90,000	$18,600	$108,600	☑
	2.4.4	Restoration & Rehab. Project Planning	0.15	$33,500	$139,000	$172,500	✓

Continued

1) For non-recurring functions and activities, the annual cost is the total function or activity cost averaged over the 10 year action plan.
2) Non-recurring costs are assumed to be completed over a ten year period.

Non-recurring Column Legend:

✓ - This function/activity is solely a non-recurring cost
☑ - This function/activity consists of both recurring and non-recurring costs (See Appendix A for more details)

Table 5-3: Estimated Costs for Functions and Activities for the Full Service Program, continued

			Future FTEs	Future Staff Costs	Future Direct Costs	Future Annual Costs[1]	Non-Recurring[2]
		Engineering Services	**3.07**	**$327,000**	**$95,000**	**$423,000**	
	3.1	Non-Regulatory Technical Assistance	0.40	$39,700		$39,700	
	3.2	Rain Gauge/Stream Gauge Network	0.79	$71,500	$57,300	$128,800	☑
	3.3.1	Emergency Action Planning	0.06	$5,400	$5,000	$10,400	☑
	3.3.2	Flood Event Response	0.04	$3,600	$2,500	$6,100	☑
	3.3.3	Post Flood Recovery	0.07	$5,580		$5,580	☑
	3.4.1	Data Collection	0.12	$10,800	$3,500	$14,300	☑
3	3.4.2	Information Distribution	0.02	$1,800		$1,800	
	3.5	Floodplain Mapping/Management	0.21	$38,950	$19,620	$58,570	
	3.6	Wetland Delineation	0.98	$88,200		$88,200	
	3.7	NPDES Phase II	0.12	$12,420	$7,500	$19,920	☑
	3.8.1	Parcel Drainage Problem Resolution	0.10	$9,000		$9,000	
	3.8.2	Local Drainage Problem Resolution	0.10	$9,000		$9,000	
	3.8.3	Subwatershed/Regional Drainage Problem	0.06	$5,400		$5,400	
	3.9	CIRS	0.29	$26,100		$26,100	
		Regulatory	**6.16**	**$573,000**	**$-**	**$573,000**	
	4.1	Permit Process	2.94	$264,600		$264,600	
	4.2	Inspection Services	0.73	$65,700		$65,700	
4	4.3	Enforcement Actions	0.49	$44,100		$44,100	
	4.4	Regulatory Technical Assistance	0.64	$57,600		$57,600	
	4.5	Ordinance/TRM Updates	0.28	$43,300		$43,300	
	4.6	Wetland Permitting Authority	1.08	$97,200		$97,200	
		Public	**1.68**	**$152,000**	**$48,000**	**$200,000**	
	5.1	General Public Information	1.25	$113,000	$48,000	$161,000	
5	5.2	Technical Training	0.31	$27,900		$27,900	
	5.3	Public Input	0.12	$10,800		$10,800	
		Maintenance	**0.75**	**$68,000**	**$5,360,000**	**$5,428,000**	
	6.1	Restoration and Rehabilitative Projects			$3,350,000	$3,350,000	✓
6	6.2.1	Maintenance Program Management	0.75	$67,500	$10,000	$77,500	☑
	6.2.2	Regional Components Maintenance			$2,000,000	$2,000,000	
	6.2.3	Local Components Maintenance					
	6.2.4	Flood Control Facility Operation					
		Capital Improvement	**7.92**	**$712,400**	**$16,375,300**	**$17,087,700**	
	7.1	Design	6.46	$581,600	$1,090,500	$1,672,100	✓
7	7.2	Construction Services	1.45	$130,800	$784,800	$915,600	✓
	7.3	Construction			$14,500,000	$14,500,000	✓
		Overall Totals:	**29.25**	**$2,671,400**	**$23,011,300**	**$25,784,700**	

1) For non-recurring functions and activities, the annual cost is the total function or activity cost averaged over the 10 year action plan.
2) Non-recurring costs are assumed to be completed over a ten year period.

Non-recurring Column Legend:

✓ - This function/activity is solely a non-recurring cost

☑ - This function/activity consists of both recurring and non-recurring costs (See Appendix A for more details)

5.5 Affordability of the Stormwater Management Program

One of the final steps in developing the cost and level of services for the stormwater program is a determination of the affordability of the program by the agency and its customers or constituency. This step must weigh the needs and costs of Lake County's stormwater management program against the ability of SMC and the public to pay. In some instances, the public's desire or demand for certain actions or level of service may be the sole determining factor in the selection of the final program costs and may outweigh cost issues. In most cases however, the compounding stormwater needs exceed the ability of the agency or the public to immediately solve all the problems. Therefore, ***a more modest and realistic program, and a more practical level of service must be selected*** in order for the program to be implementable. For Lake County, the "Full Service" stormwater management problems and needs not only greatly exceed the current funding levels, but they likely exceed the funding capabilities even with a stormwater user fee in place.

The full service stormwater management program outlined in this section for Lake County has an estimated annual cost of nearly $26 million. This cost includes services such as Maintenance and Capital Improvements that are currently not supported at the required levels to address the countywide stormwater management needs. Even with these major costs distributed over a ten-year implementation period, the annual costs of the full service stormwater management program in Lake County is nearly 10 times greater than the current program.

In assessing affordability, the analysis must examine the needs, costs and "ability to pay" and find a balance that is acceptable to the public and major stakeholders in the county. It is appropriate to revisit the costs of other similar programs and the potential revenue that could be generated by a stormwater user fee. These costs must then be compared with the costs of providing the full service stormwater program or some reduced, implementable program that is developed into the action plan. The resulting reduced-level-of-service program can then serve as the first step toward long-term implementation of a full service stormwater management program.

5.5.1 Stormwater Program Cost Projection

Stormwater program costs for similar jurisdictions were presented previously in Table 5-2. Those costs are presented again in Table 5-4 and were adjusted to Lake County based on area to estimate potential costs for SMC's stormwater management program. The resulting projected program costs for Lake County range from $12.6 million per year (based on St. Louis, Missouri costs), to $58.2 million per year (based on Charlotte, North Carolina costs). Programs with significant maintenance and capital components yield projected Lake County costs that are generally in the $20 to $30 million range, with an average of just under $30 million. These numbers validate an overall program cost in the $30 million range, assuming both significant maintenance and capital components. However, programs with minimal maintenance components would yield projected Lake County costs (with minimal maintenance) in the $13 to $15 million range. The general conclusion that may be drawn from these projections is that a comprehensive Lake County program with both significant maintenance and capital components would cost approximately $30 million. ***Similarly, a comprehensive program excluding significant maintenance may have a cost in the $13 to $15 million range.***

Table 5-4: Stormwater Program Cost Projections

Jurisdiction/ Municipality	Total Program Costs (Millions)	Area (Sq. Mi.)	Annual Cost per Acre	Projected Lake County Cost Based on Area (Millions)	Major Program Components
Lake County	$2.3M	469	$7.66	--	Limited Capital
DuPage County	$11M	335	$51.31	$15.4M	Capital Improvement Intensive
Columbus	$15M	211	$111.08	$33.3M	Maintenance and Capital
Tulsa	$9M	200	$70.31	$21.1M	Maintenance Intensive
St. Louis (expanded program)	$35M	520	$104.37	$31.3M	Maintenance Intensive; Some Capital
St. Louis (current program)	$14M	520	$42.07	$12.6M	No Maintenance; Some Capital
Louisville	$18M	280	$100.35	$30.2M	Maintenance and Capital
Austin	$22M	374	$91.91	$27.6M	Capital Improvement Intensive
Charlotte	$31M	250	$193.75	$58.2M	Capital Improvement Intensive

5.5.2 User Fee Comparison

The User Fee Study completed for SMC in May 2000, evaluated various funding mechanisms and recommended the user fee as the best long-term funding mechanism for the stormwater program. A summary of the alternative funding mechanisms evaluated in the User Fee Study is provided in Appendix D. The 1990 Plan as well as this Update recommend an alternative dedicated primary funding mechanism to generate the revenue required to implement Lake County's stormwater management program. The User Fee Study developed preliminary estimates of the number of potential billing units and revenue projections for various user fee rates (CDM, 2000). For a range of rates from $1.00 to $2.00 per month per billing unit, the estimated revenue generated would range from $9 million to $18 million. It was concluded in the User Fee Study that a rate of $1.00 to $2.00 per month (per average residential unit) would be an acceptable billing rate to the Lake County public. Therefore, this rate would support a stormwater management program at a cost level of **$9 to $18 million per year.**

5.5.3 Current Economic Realities

Preparation of this Comprehensive Plan Update spans a time period when the economy has contracted dramatically. County revenues are projected to be significantly lower than in recent years, with projected deficits that may be experienced by all levels of government. Additionally, the events of September 11, 2001 have interjected a cautious and conservative approach to both business and government growth as well as implementation of new initiatives. These current realities must be factored into the decision-making process regarding the selection of the appropriate level of service and costs of SMC's future stormwater management program. SMC's future program must be sensitive to these issues in weighing the benefits of an expanded future program against

the economic impacts that may be associated with corresponding increased costs.

Given these economic realities, the potential user fee or other fund source revenues and potential program costs would tend to favor a somewhat modest approach to SMC's future stormwater management program. This modest approach would offer a reasonable program to meet a number of the county's pressing stormwater management needs, yet at the same time minimize the impact to people of Lake County who ultimately must pay for these services. This approach would indicate that a program funded at a **$10 to $15 million** level might be appropriate at this time. However, the ultimate decision on the magnitude of the program rests with the Commission during its deliberations and discussions on the final acceptance of the updated Comprehensive Plan. For the purposes of developing and recommending an action plan for SMC, CDM recommends that a $15 million budget be utilized in the development of the ten-year Action Plan for SMC. The Action Plan in Section 6 would be a subset of the $26 million full service program developed in this section, with appropriate reductions in level of service or increases in the implementation time frames for program initiatives. The Action Plan will be developed with the flexibility to be easily modified by SMC and the Commission to adjust these costs to meet redefined priorities or funding limits, if appropriate.

Section 6
Action Plan

6.1 Introduction

The most important output of this Comprehensive Plan Update is an Action Plan for the implementation of the future SMC stormwater management program. This section develops an Action Plan to guide SMC over the next ten years of providing countywide stormwater management services. In addition, this section presents a summary of SMC's roles and responsibilities for stormwater management and identifies where SMC's services have been preserved at the current level, where they have been enhanced, and where new services have been added to provide an improved stormwater management program to its constituents.

6.2 Action Plan Development

The Action Plan is intended to be the road map for implementation of SMC's future stormwater management program. It is intended to present the functions and activities of the future program, their costs and the timeline for implementation. A ten-year planning period was selected as an appropriate time frame. Although specific projects and initiatives become difficult to identify beyond a three to five year planning horizon, the ten-year approach provides a long term planning tool that incorporates the known near-term actions as well as the longer term activities that are necessary to make the program a success.

The Action Plan considered several factors in its development: sequencing; priorities; budget or cost; cost-effectiveness and level of service.

In identifying the timing of the various tasks and activities associated with SMC's stormwater management program, it was important to consider the logical sequencing necessary for proper implementation and development of the program. For example, project planning must occur before a project can be designed or constructed. This logical sequencing has been considered in developing the order of activities of the program.

The relative priority of any activity is an obviously important factor in the development of the Action Plan. The SAC performed an exercise to establish priorities for the various stormwater functions and services provided by SMC. Several tiers of priorities were established. These priorities were used in conjunction with the mission, goals and policies discussed in Section 1 to develop an implicit hierarchy of services that have been incorporated into the Action Plan development.

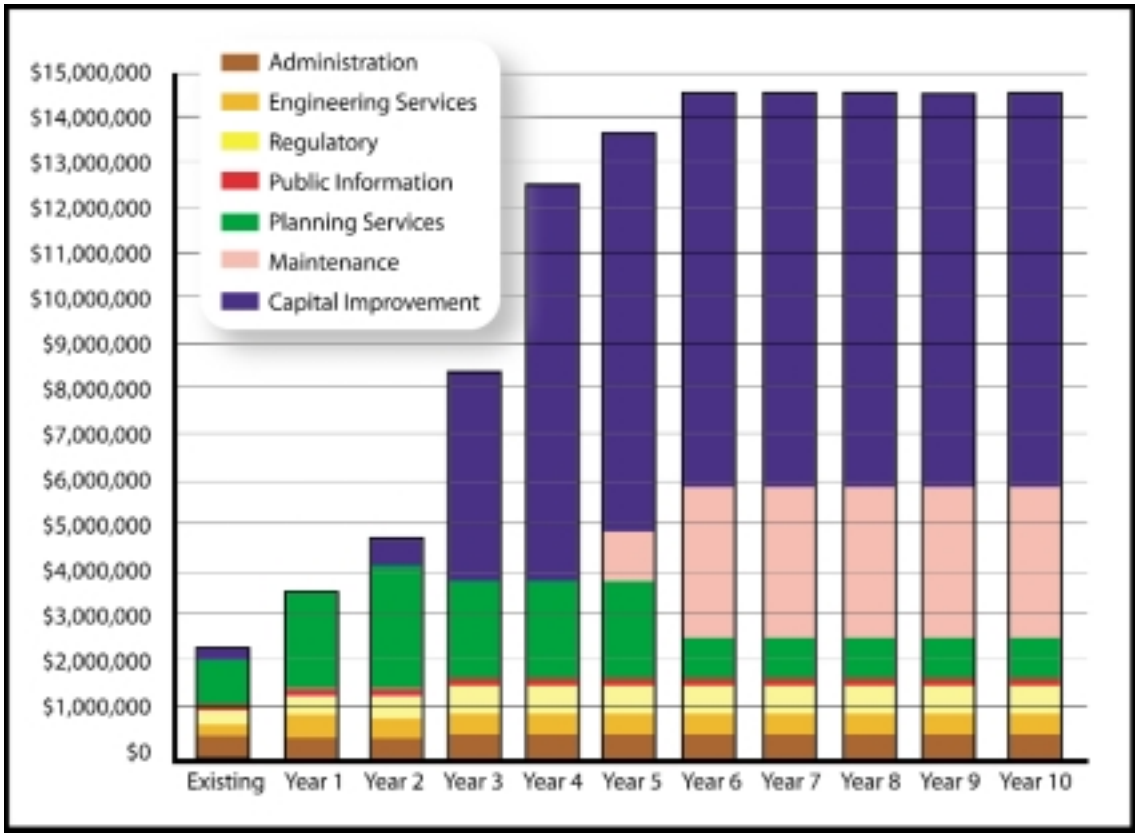
Budget and costs are also critical factors to be considered in the development of the Action Plan. Specifically, the affordability discussion in Section 5 established an upper limit to the services that SMC can provide. Recognizing that the full service program was impractical, ***the program cost was defined at $15 million per year.*** This cost limit was used to balance various services and activities across the ten-year planning framework. In some instances, such as long-term capital improvements, a 25-year implementation timeline was considered because of cost limitations. These assumptions are documented on the Cost Estimate Worksheets in Appendix C. Costs were shown to "ramp up" over the 10-year period, ***assuming implementation of the enhanced revenue source in Year 3.***

The last factor that was considered in the development of the Action Plan was the "level of service." SMC's stormwater management program was developed to provide an affordable level of service to meet the needs for stormwater management in the county. Although the level of

service is in essence controlled by the budget, it is an important factor in prioritizing certain activities that may be important to meet political or public expectations.

Table 6-1, at the end of this section, presents the fiscal budget breakdown in terms of SMC's stormwater functions and activities and their estimated costs over the ten-year planning period for a $15 million program. The costs and relative timing of each activity represent an appropriate balance to achieve an implementable program that meets the expectations of the public and the stormwater management needs of the county. Figure 6-1 presents the distribution of costs by major functional category for 10-year planning window. The initial year, Year 1, is dominated by planning services, with watershed planning being a critical component of the program. Year 3 introduces a greater amount of Capital Improvement, which becomes the dominant functional category for the remaining years of the action plan. Maintenance costs are introduced in Year 4 and the cost increases and then levels out in Year 6 as the second largest portion of the total budget. Planning Services decrease in Year 6 due to the finalization of the individual watershed plans. The plan is based on the assumption that enhanced revenues are available in Year 3.

Figure 6-1: Budget Allocation for Existing Program and Years 1 Through 10 Programs



6.3 Action Plan

Table 6-2 at the end of this section, presents the Action Plan for SMC's stormwater management program. The Action Plan summarizes the functions and activities necessary for a comprehensive stormwater management program consistent with the $15 million program. The table also defines where the level of service has changed to aid in determining where the program has been improved or enhanced. It also presents the general time period and sequence for each major initiative or activity. Where possible, specific project initiatives are shown, such as the Des Plaines River project. Costs for these services were presented in Table 6-1. Additional cost detail can be found in Appendix C.

6.3.1 Action Plan Recommendations

The Action Plan recommendations are based on the revenue increase and having a $15 million per year program by Year 5. In order to create the plan, the SMC staff should expand from the current size of 18 to 24 by Year 5. The additional staff will provide increased planning, design, regulatory functions and public education and involvement to meet the stormwater needs of Lake County. If the revenue source is not identified by Year 1 and implemented by Year 3, the expanded services will be delayed until additional revenue is secured. The recommended Action Plan includes, but is not limited to the following expanded and enhanced services:

1. Monitor and participate in efforts in support of an alternative dedicated funding mechanism-enabling legislation, if needed. Implement this funding mechanism when it is available. Preparation for billing may require 1½ to 2 years.)
2. Accelerate the production of the remaining 16 watershed plans to complete by the end of Year 5.
3. Prepare a Water Quality Improvement Strategy that identifies the countywide approach to identifying and implementing water quality projects and provides recommendations for long-term surface water quality.
4. Prepare a Wetland Preservation Plan that identifies critical wetlands for flood control and water quality management, including banking opportunities for new development.
5. Develop a restoration and rehabilitation plan for the major waterways and drainage systems in the county that can serve as a component of a countywide maintenance program.
6. Prepare the "Flood Annex" to the Lake County Emergency Operations and Preparedness Plan. Define SMC's and other jurisdictions' roles in flood response. Prepare technical guidance to standardize flood damage reporting for local communities. Establish and facilitate a Flood Hazard Task Force for post-flood decision-making.
7. Develop a GIS needs assessment and data management system for stormwater related data and information and reach an agreement with the Lake County Management Services Department to distribute stormwater related data and information directly to engineers, municipalities and planners.
8. Work with FEMA to assume responsibility for preparing the county's NFIP Floodplain maps and pursue an agreement to perform Letter of Map Amendment (LOMA) and Letter of Map Revision (LOMR) reviews for FEMA.
9. Prepare updated floodplain maps based on the watershed plans and include depressional floodplain areas using the new countywide 2-foot topographic maps.
10. Provide jurisdictional determination of wetlands for all developments and wetland delineations for small private property owners.

11. Assist the local communities in complying with the EPA's NPDES Phase II stormwater regulations. Facilitate public involvement and education, and construction and post development runoff control, and develop technical guidance for good housekeeping/pollution prevention and illicit discharge measurement.
12. Expand regulatory support functions to meet the demands of ongoing development in the county and increase inspection and enforcement capacity.
13. Expand public education and information programs to support the Phase II stormwater NPDES program, watershed plan implementation and watershed stewardship. Target specific audiences for outreach efforts.
14. Prepare a countywide maintenance program and standards that identify maintenance needs, responsibilities and costs. Establish a dedicated revenue source for maintenance of trunk system. Seek revenue sources that could support maintenance needs in local jurisdictions.
15. Expand the Capital Improvement Program, which includes non-structural solutions, to address the known high priority problems over a ten-year period.
16. Initiate collaboration to purchase greenways and other critical components of the natural drainage system.

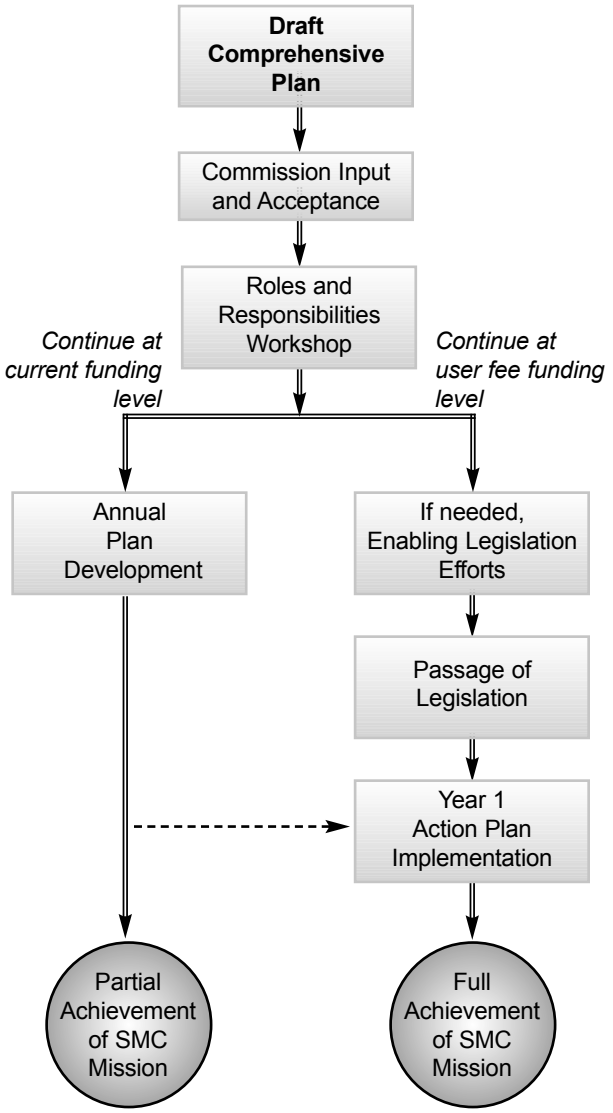
6.4 Implementation

Several critical issues must be resolved for SMC to effectively implement its stormwater management plan at the recommended level. Implementation issues include:

- Final acceptance by the Commission.
- A clear understanding by all the involved jurisdictions in Lake County of what their the roles and responsibilities are regarding stormwater management.
- Establishment of an alternative revenue enhancement program.
- Development of SMC annual work plans.

Figure 6-2 presents a flow chart of these critical implementation issues. The flow chart presents the basic steps to move forward with implementation of the Comprehensive Plan 2002 regardless of the timing of any needed enabling legislation.

Figure 6-2: Implementation Steps



6.4.1 Commission Acceptance

This draft Comprehensive Plan was prepared with significant input from the SAC and SMC staff and represents the consensus views of all those who participated. In the process of defining the roles and responsibilities of SMC and formulating an Action Plan, a number of challenging issues and polices were addressed regarding stormwater management. These issues, along with the recommendations in the Plan must be discussed at length with the Commission to obtain its final acceptance for implementation of the Plan. Commission input and acceptance are the final critical step before SMC can begin using the Plan to guide its actions over the next ten years.

6.4.2 Understanding of Stormwater Management Roles and Responsibilities

Development of this Comprehensive Plan Update dedicated significant effort to defining and understanding the role and responsibilities for SMC in the numerous activities and needs relative to stormwater management in Lake County. The SMC Role Definition table in Section 4 presented a summary of this effort. However, as in any planning effort, the plan must be implemented to be effective. Dissemination of the understanding of roles and responsibilities across all the involved jurisdictions must be the first step to implement SMC's program. It is recommended that SMC facilitate a workshop with jurisdictions with responsibility for stormwater management in Lake County to present the role definition as presented in the Plan Update. This workshop could be a separate initiative, or could be a component of the upcoming NPDES-required public education and involvement activities.

6.4.3 Establishment of a Dedicated Primary Funding Mechanism for SMC

SMC's grants/cost-share leverage ratio has been 1:10 in recent years. Although SMC has demonstrated considerable resourcefulness and progress with its limited budgets to date, it cannot begin to implement the recommended services and activities presented in the Action Plan without a significant increase in dedicated revenue. The recommended ten-year program in the Action Plan stands as relatively modest plan when measured against similar comprehensive stormwater programs in the Midwest. Yet, it represents a three-fold increase in cost (and service) above the current program.

Efforts must continue to move enabling legislation, if needed, forward in Springfield. ***Enabling legislation and local endorsement are the most critical steps for implementation of SMC's stormwater management program.*** Without an alternative dedicated funding source, SMC will continue to provide only the bare minimum of services to meet the stormwater needs in the county.

6.4.4 Development of Annual Plans

The Action Plan Summary and the ten-year Action Plan costs provide SMC with the information to guide the Stormwater Management Program. However, beyond the initial several years, it does not provide specific information for planning specific activities for the coming year. The information provided in this section, combined with the Cost Estimate Worksheets in Appendix C and SMC's current needs, can be used by SMC to prepare detailed annual plans that identify specific projects for each coming year.

Table 6-1: Lake County SMC Fiscal Year Budget Breakdown Existing and Years 1 Through 10

	Functions and Activities	Change in Level of Service?	Existing Budget[1] Total Costs	Fiscal Year Year 1 Total Costs	Fiscal Year Year 2 Total Costs	Fiscal Year Year 3 Total Costs	Fiscal Year Year 4 Total Costs	Fiscal Year Year 5 Total Costs	Fiscal Year Year 6 Total Costs	Fiscal Year Year 7 Total Costs	Fiscal Year Year 8 Total Costs	Fiscal Year Year 9 Total Costs	Fiscal Year Year 10 Total Costs
1 1	**Administration**												
1.1	Liaison to County Government	Existing	$ 10,900	$ 10,900	$ 10,900	$ 10,900	$ 10,900	$ 10,900	$ 10,900	$ 10,900	$ 10,900	$ 10,900	$ 10,900
1.2	Human Resources	Existing	$ 32,200	$ 32,200	$ 37,200	$ 42,500	$ 42,500	$ 42,500	$ 43,400	$ 43,400	$ 43,400	$ 43,400	$ 43,600
1.3	Office Management	Existing	$ 7,800	$ 7,800	$ 9,000	$ 10,300	$ 10,300	$ 10,300	$ 10,500	$ 10,500	$ 10,500	$ 10,500	$ 10,500
1.4	PC/Network Support	Existing	$ 15,800	$ 15,800	$ 18,300	$ 20,900	$ 20,900	$ 20,900	$ 21,300	$ 21,300	$ 21,300	$ 21,300	$ 21,400
1.5	Internal Communication and Coordination	Existing	$ 65,500	$ 65,500	$ 75,800	$ 86,500	$ 86,500	$ 86,500	$ 88,400	$ 88,400	$ 88,400	$ 88,400	$ 88,800
1.6	Career Development and Training	Existing	$ 65,100	$ 65,100	$ 75,300	$ 85,900	$ 85,900	$ 85,900	$ 87,800	$ 87,800	$ 87,800	$ 87,800	$ 88,200
1.7	Financial Management and Purchasing	Existing	$ 37,900	$ 37,900	$ 43,800	$ 50,000	$ 50,000	$ 50,000	$ 51,100	$ 51,100	$ 51,100	$ 51,100	$ 51,300
1.8	Budget Development and Tracking	Existing	$ 46,600	$ 46,600.00	$ 53,900	$ 61,500	$ 61,500	$ 61,500	$ 62,900	$ 62,900	$ 62,900	$ 62,900	$ 63,100
1.9	Commission Support	Existing	$ 17,100	$ 17,100	$ 19,800	$ 22,600	$ 22,600	$ 22,600	$ 23,100	$ 23,100	$ 23,100	$ 23,100	$ 23,200
1.10	User Fee Administration	New	$ -	$ -	$ -	$ 90,000	$ 90,000	$ 90,000	$ 90,000	$ 90,000	$ 90,000	$ 90,000	$ 90,000
	Administration Subtotals:		**$ 298,900**	**$ 298,900**	**$ 344,000**	**$ 481,100**	**$ 481,100**	**$ 481,100**	**$ 489,400**	**$ 489,400**	**$ 489,400**	**$ 489,400**	**$ 491,000**
2 2	**Planning Services**												
2.1	Watershed Planning	Enhanced	$ 489,000.00	$ 1,539,000	$ 1,539,000	$ 1,539,000	$ 1,539,000	1539000	$ 243,900	$ 243,900	$ 243,900	$ 243,900	$ 243,900
2.2	Regional Planning	Existing	$ 42,400.00	$ 42,400	$ 42,400	$ 42,400	$ 42,400	42400	$ 42,400	$ 42,400	$ 42,400	$ 42,400	$ 42,400
2.3	Institutional Planning	Existing	$ 118,900.00	$ 25,000	$ 525,000	$ 25,000	$ 25,000	25000	$ 25,000	$ 25,000	$ 25,000	$ 25,000	$ 25,000
2.4.1	Flood Damage Reduction Project Planning												
	Other Projects	Enhanced	$ 187,500.00		$ 267,000	$ 267,000	$ 267,000	$ 267,000	$ 267,000	$ 267,000	$ 267,000	$ 267,000	$ 267,000
	Des Plaines	Existing		$ 168,000	$ 162,000								
2.4.2	Water Quality Project Planning	Enhanced	$ 60,000.00	$ 102,000	$ 102,000	$ 102,000	$ 102,000	$ 102,000	$ 102,000	$ 102,000	$ 102,000	$ 102,000	$ 102,000
2.4.3	Wetland Project Planning	Enhanced	$ 99,300.00	$ 213,000	$ 90,000	$ 90,000	$ 90,000	$ 90,000	$ 90,000	$ 90,000	$ 90,000	$ 90,000	$ 90,000
2.4.4	Restoration & Rehab. Project Planning	New				$ 50,000	$ 67,000	$ 67,000	$ 67,000	$ 67,000	$ 67,000	$ 67,000	$ 67,000
	Planning Services Subtotals:		**$ 997,100**	**$ 2,089,400**	**$ 2,727,400**	**$ 2,115,400**	**$ 2,132,400**	**$ 2,132,400**	**$ 837,300**	**$ 837,300**	**$ 837,300**	**$ 837,300**	**$ 837,300**
3 3	**Engineering Services**												
3.1	Non-Regulatory Technical Assistance	Existing	$ 39,700	$ 39,700	$ 39,700	$ 39,700	$ 39,700	$ 39,700	$ 39,700	$ 39,700	$ 39,700	$ 39,700	$ 39,700
3.2	Rain Gauge/Stream Gauge Network	Enhanced	$ 32,500	$ 56,700	$ 76,000	$ 66,000	$ 66,000	$ 66,000	$ 98,800	$ 98,800	$ 98,800	$ 98,800	$ 128,800
3.3.1	Emergency Action Planning												
	Flood Annex	New		$ 50,000									
	Training	New			$ 5,400	$ 5,400	$ 5,400	$ 5,400	$ 5,400	$ 5,400	$ 5,400	$ 5,400	$ 5,400
3.3.2	Flood Event Response												
	Early Flood Warning System Study	New			$ 25,000								
	Workshops	Enhanced				$ 3,600	$ 3,600	$ 3,600	$ 3,600	$ 3,600	$ 3,600	$ 3,600	$ 3,600
	Event Response	Existing	$ 108,800										
3.3.3	Post Flood Recovery												
	Technical Guidance Standards	New				$ 10,800	$ 1,800	$ 1,800	$ 1,800	$ 1,800	$ 1,800	$ 1,800	$ 1,800
	Flood Hazard Task Force	New		$ 3,600	$ 3,600	$ 3,600	$ 3,600	$ 3,600	$ 3,600	$ 3,600	$ 3,600	$ 3,600	$ 3,600
3.4.1	GIS Data Collection	Enhanced	$ 6,900	$ 6,900	$ 17,800	$ 17,800	$ 17,800	$ 17,800	$ 17,800	$ 10,800	$ 10,800	$ 10,800	$ 10,800
3.4.2	GIS Information Distribution	New			$ 1,800	$ 1,800	$ 1,800	$ 1,800	$ 1,800	$ 1,800	$ 1,800	$ 1,800	$ 1,800
3.5	Floodplain Mapping/Management	New		$ 56,300	$ 56,300	$ 56,300	$ 56,300	$ 56,300	$ 21,600	$ 21,600	$ 21,600	$ 21,600	$ 21,600
3.6	Non-Regulatory Wetland Program	Enhanced	$ 18,400	$ 88,200	$ 88,200	$ 88,200	$ 88,200	$ 88,200	$ 88,200	$ 88,200	$ 88,200	$ 88,200	$ 88,200
3.7	NPDES Phase II												
	Technical Guidance Standards	New		$ 16,200	$ 9,000	$ 9,000	$ 9,000	$ 9,000	$ 9,000	$ 9,000	$ 9,000	$ 9,000	$ 9,000
	Illicit Discharge/Pollution Prevention	New		$ 75,000									
	Coordination/Administration	New			$ 1,800	$ 1,800	$ 1,800	$ 1,800	$ 1,800	$ 1,800	$ 1,800	$ 1,800	$ 1,800
3.8.1	Parcel Drainage Problem Resolution	Existing		$ 9,000	$ 9,000	$ 9,000	$ 9,000	$ 9,000	$ 9,000	$ 9,000	$ 9,000	$ 9,000	$ 9,000
3.8.2	Local Drainage Problem Resolution	Existing		$ 9,000	$ 9,000	$ 9,000	$ 9,000	$ 9,000	$ 9,000	$ 9,000	$ 9,000	$ 9,000	$ 9,000
3.8.3	Subwatershed/Regional Drainage Problem Resolution	Existing		$ 5,400	$ 5,400	$ 5,400	$ 5,400	$ 5,400	$ 5,400	$ 5,400	$ 5,400	$ 5,400	$ 5,400
3.9	CIRS	Existing	$ 22,500	$ 26,100	$ 26,100	$ 26,100	$ 26,100	$ 26,100	$ 26,100	$ 26,100	$ 26,100	$ 26,100	$ 26,100
	Engineering Services Subtotals:		**$ 206,300**	**$ 442,100**	**$ 374,100**	**$ 353,500**	**$ 344,500**	**$ 344,500**	**$ 342,600**	**$ 335,600**	**$ 335,600**	**$ 335,600**	**$ 365,600**
4 4	**Regulatory**												
4.1	Permit Process	Enhanced	$ 180,700.00	$ 264,600	$ 264,600	$ 264,600	$ 264,600	$ 264,600	$ 264,600	$ 264,600	$ 264,600	$ 264,600	$ 264,600
4.2	Inspection Services	Enhanced	$ 45,000.00	$ 65,700	$ 65,700	$ 65,700	$ 65,700	$ 65,700	$ 65,700	$ 65,700	$ 65,700	$ 65,700	$ 65,700
4.3	Enforcement Actions	Enhanced	$ 32,300.00	$ 44,100	$ 44,100	$ 44,100	$ 44,100	$ 44,100	$ 44,100	$ 44,100	$ 44,100	$ 44,100	$ 44,100
4.4	Regulatory Technical Assistance	Enhanced	$ 46,500.00	$ 57,600	$ 57,600	$ 57,600	$ 57,600	$ 57,600	$ 57,600	$ 57,600	$ 57,600	$ 57,600	$ 57,600
4.5	Ordinance/TRM Updates	Existing	$ 43,300.00	$ 43,300	$ 43,300	$ 43,300	$ 43,300	$ 43,300	$ 43,300	$ 43,300	$ 43,300	$ 43,300	$ 43,300
4.6	Wetland Permitting Authority	New				$ 97,200	$ 97,200	$ 97,200	$ 97,200	$ 97,200	$ 97,200	$ 97,200	$ 97,200
	Regulatory Subtotals:		**$ 347,800**	**$ 475,300**	**$ 475,300**	**$ 572,500**	**$ 572,500**	**$ 572,500**	**$ 572,500**	**$ 572,500**	**$ 572,500**	**$ 572,500**	**$ 572,500**
5 5	**Public**												
5.1	General Public Information	Enhanced	$ 83,000.00	$ 160,500	$ 160,500	$ 160,500	$ 160,500	$ 160,500	$ 160,500	$ 160,500	$ 160,500	$ 160,500	$ 160,500
5.2	Technical Training	Enhanced	$ 13,300.00	$ 27,900	$ 27,900	$ 27,900	$ 27,900	$ 27,900	$ 27,900	$ 27,900	$ 27,900	$ 27,900	$ 27,900
5.3	Public Input	Enhanced	$ 3,800.00	$ 10,800	$ 10,800	$ 10,800	$ 10,800	$ 10,800	$ 10,800	$ 10,800	$ 10,800	$ 10,800	$ 10,800
	Public Subtotals:		**$ 100,100**	**$ 199,200**	**$ 199,200**	**$ 199,200**	**$ 199,200**	**$ 199,200**	**$ 199,200**	**$ 199,200**	**$ 199,200**	**$ 199,200**	**$ 199,200**
6 6	**Maintenance**												
6.1	Restoration and Rehabilitative Projects	Enhanced	$ 29,400						$ 1,340,000	$ 1,340,000	$ 1,340,000	$ 1,340,000	$ 1,340,000
6.2.1	Maintenance Program Management												
	Program Manual, Standards and Inventor	New						$ 100,000					
	Coordination/Administration	New						$ 67,500	$ 67,500	$ 67,500	$ 67,500	$ 67,500	$ 67,500
6.2.2	Regional Components Maintenance	New						$ 1,000,000	$ 2,000,000	$ 2,000,000	$ 2,000,000	$ 2,000,000	$ 2,000,000
	Maintenance Subtotals:		**$ 29,400**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 1,167,500**	**$ 3,407,500**	**$ 3,407,500**	**$ 3,407,500**	**$ 3,407,500**	**$ 3,407,500**
7 7	**Capital Improvement**												
7.1	Design	Enhanced	$ 81,700		$ 476,700	$ 476,700	$ 848,700	$ 848,700	$ 848,700	$ 848,700	$ 848,700	$ 848,700	$ 848,700
7.2	Construction Services	Enhanced	$ 21,700			$ 465,200	$ 465,200	$ 465,200	$ 465,200	$ 465,200	$ 465,200	$ 465,200	$ 465,200
7.3	Construction	Enhanced	$ 175,300			$ 3,690,000	$ 7,380,000	$ 7,380,000	$ 7,380,000	$ 7,380,000	$ 7,380,000	$ 7,380,000	$ 7,380,000
	Capital Improvement:		**$ 278,700**	**$ -**	**$ 476,700**	**$ 4,631,900**	**$ 8,693,900**	**$ 8,693,900**	**$ 8,693,900**	**$ 8,693,900**	**$ 8,693,900**	**$ 8,693,900**	**$ 8,693,900**
	Overall Totals:		**$ 2,258,300**	**$ 3,504,900**	**$ 4,596,700**	**$ 8,353,600**	**$ 12,423,600**	**$ 13,591,100**	**$ 14,542,400**	**$ 14,535,400**	**$ 14,535,400**	**$ 14,535,400**	**$ 14,567,000**

Note: Existing Program Budget was categorized in less detail than the future program. Therefore, there is no existing cost data for certain future sub-catagories that are in fact currently performed by SMC.

1 Administration Functions and Activities	Fiscal Year 1	Fiscal Years 2 to 5	Fiscal Years 6 to 10	Section 6.3.1 Recomendation Number
Various Administrative Services	Continue with administrative support services	Continue	Continue	
User Fee	Participate with other counties and associations in the pursuit of enabling legislation	Provide equivalent full time staff member to administer user fee program when enabling legislation is obtained.	Continue	1

2 Planning Services Functions and Activities	Fiscal Year 1	Fiscal Years 2 to 5	Fiscal Years 6 to 10	Section 6.3.1 Recomendation Number
Watershed Planning	Initiate enhanced watershed planning (3 new plans)	Conduct 4 watershed plans per year, completing by end of Year 5	Continue watershed planning to keep plans up to date	2
Regional Planning and Institutional Planning	Continue regional and institutional planning at existing levels	Continue	Continue	
Flood Damage Reduction Project Planning		Initiate flood damage reduction planning in support of capital improvements as ongoing effort through Year 10	Continue	
Water Quality Project Planning	Continue water quality planning and prepare a Water Quality Improvement Strategy	Conduct water quality planning at enhanced level in support of ongoing capital improvements as ongoing effort through Year 10	Continue	3
Wetland Project Planning	Develop wetland preservation plan and identify banking opportunities	Continue wetland planning as opportunities arise on ongoing projects.	Continue	4
Restoration and Rehabilitative Project Planning		Complete Restoration and Rehabilitation Plan in Year 3; Initiate planning in support of restoration and rehabilitation maintenance projects in Year 4	Continue	5

3 Engineering Services

Functions and Activities	Fiscal Year 1	Fiscal Years 2 to 5	Fiscal Years 6 to 10	Section 6.3.1 Recomendation Number
Non-Regulatory Technical Assistance	Continue non-regulatory technical assistance	Continue	Continue	
Rain Gauge/Stream Network	Add 5 additional rain gauges to network	Add 5 more additional rain gauges to network, bringing total to 19	Continue to operate rain gauge network	
Emergency Action Planning, Response and Recovery	Develop the Flood Annex to the Lake County Emergency Operations and Preparedness Plan; Organize a Flood Hazard Task Force	Conduct Emergency Action Planning Workshop in Year 2; Evaluate the feasibility of an early warning system in Year 2; Prepare technical guidance to support flood recovery efforts by communities in Year 3	Continue facilitation of Task Force and conducting Emergency Action Planning Workshops on annual basis	**6**
GIS Data Collection and Information Distribution	Continue current GIS services	Prepare internal GIS Needs Assessment; Begin enhanced effort to incorporate appropriate data and information into GIS; Continue GIS data entry; Develop agreement with Lake County Planning to distribute stormwater-related GIS information and data; Provide GIS information and data to users	Continue enhanced level of GIS service	**7**
Floodplain Mapping/Management	Initiate efforts to become FEMA CTP and assume responsibility for maintaining regulatory floodplain maps for Lake County	Prepare regulatory Floodplain maps including depressional floodplains; Begin review of FEMA submittals, floodplain mapping responsibilities and continue annually	Continue expanded floodplain review and mapping services	**8, 9**
Wetland Delineation	Offer wetlands delineations for small private property owners	Continue	Continue	**10**
NPDES Phase II	Prepare guidance document for runoff control and public involvement and education to be used by all communities in the county; Develop specific technical guidance for illicit discharge program and pollution prevention and good housekeeping program; Provide significant support to local jurisdictions as Local Qualifying Program	Assist local communities in their Public Involvement and Education Programs through SMC's Public Information functions and activities	Continue	**11**
CIRS	Continue CIRS program.	Continue and expand as needed based on future growth. Develop GIS-based tracking system	Continue	
Drainage Problem Resolution	Continue parcel drainage problem resolution assistance where local communities do not have adequate expertise; Continue problem resolution for interjurisdictional problems and WDO violations; Continue resolution of subwatershed/regional problems.	Continue	Continue	

4 Regulatory				Section 6.3.1 Recomendation Number
Functions and Activities	**Fiscal Year 1**	**Fiscal Years 2 to 5**	**Fiscal Years 6 to 10**	
Permit processing, inspection services, enforcement, regulatory technical assistance and WDO and TRM updates	Continue these services at the present level of service (this now includes isolated wetland responsibilities); Continue to provide jurisdictional determinations of wetlands. Continue to develop web-based documents such as WDO and TRM	Expand regulatory support services to meet demands from continued growth in Lake County; Develop toobox for Enforcement Officers	Continue	12
Wetland Permitting Authority	Continue expanded isolated wetlands and jurisdictional determination program	Continue	Continue	

5 Public Information				Section 6.3.1 Recomendation Number
Functions and Activities	**Fiscal Year 1**	**Fiscal Years 2 to 5**	**Fiscal Years 6 to 10**	
General Public Information	Enhance public information program for NPDES program and other needs	Provide assistance to local communities in Year 2 in complying with NPDES program; Continue assistance throughout permit term	Continue	13
Technical Training	Enhance technical training and target specific audiences	Implement enhanced technical training	Continue	
Public Input	Enhance public involvement program to facilitate NPDES requirements	Track and monitor SMC and local public involvement programs for compliance with NPDES requirements	Continue	

6 Maintenance				Section 6.3.1 Recomendation Number
Functions and Activities	**Fiscal Year 1**	**Fiscal Years 2 to 5**	**Fiscal Years 6 to 10**	
Restoration and Rehabilitative Projects	See Planning Function for R & R Plan development	Planning and design for R & R projects begins in Year 2 and Year 3; Continue R & R projects annually in accordance with budget	Initial construction of R & R projects in Year 6	
Maintenance Program Management	No change in first year	Develop countywide maintenance program in Year 5; Prepare Maintenance Manual of Practices in Year 5	Provide staff support to manage the maintenance program for SMC	14
Regional and Local Maintenance	No change in first year	Begin first year of maintenance in Year 5; Maintenance allocation will enable SMC to do trunk system and interjurisdictional maintenance; Explore possibilities for additional funding and maintenance assistance to local jurisdictions	Continue annual maintenance at level established in budget	
Flood Control Facility Operation	No flood control facilities to operate at this time	No flood control facilities to operate at this time	No flood control facilities to operate at this time	

7 Capital Improvement				Section 6.3.1 Recomendation Number
Functions and Activities	**Fiscal Year 1**	**Fiscal Years 2 to 5**	**Fiscal Years 6 to 10**	
Design	Continue current design efforts	Initiate design services for additional capital improvements in Year 2; Expand design services as a percentage of capital construction	Continue expanded design services	**15**
Construction Services	No planned major construction until Year 3.	Expand construction services in support of construction in Year 3	Continue ongoing construction services in support of construction through Year 10	
Construction	No planned major construction until Year 3.	Expand capital improvements construction in Year 3	Continue expanded capital program at $7 million per year	**16**

APPENDIX A

ADMINISTRATIVE SUPPLEMENT

The Stormwater Management Commission (hereinafter "SMC) shall have the following powers and authority, in addition to any other powers or authority set forth elsewhere in the adopted Lake County Comprehensive Stormwater Management Plan:

1. To direct and administer the implementation and revision of the Comprehensive Stormwater Management Plan of Lake County, Illinois based upon watershed studies and individual basin plans;
2. To provide technical assistance to local governments and to local agencies in the implementation and/or revision of the adopted Lake County Comprehensive Stormwater Management Plan, and in the enforcement of any rules, regulations, or ordinances adopted in accordance with, said plan;
3. To make and execute all contracts and other instruments necessary and convenient to the exercise or its powers and authority;
4. To adopt, enforce and administer, rules, regulations, and guidelines as permitted under any ordinance adopted in accordance with approved Lake County Comprehensive Stormwater Management Plan as the SMC deems necessary and advisable for the design, operation, maintenance, management, government and use of the SMC's facilities and any other drainage and flood control facilities under its jurisdiction;
5. To recruit, hire appraise and terminate personnel, both technical and non-technical, as the SMC may deem necessary, for the purpose of directing and administering the implementation and revision of the adopted Lake County Comprehensive Stormwater Management Plan and related programs thereunder, and to establish the compensation and salaries for such personnel;
6. To retain such other consultants, as the SMC may deem necessary, for the purpose of implementing and revising the adopted Lake County Comprehensive Storwater Management Plan;
7. To enter into leases as lessee for the purpose of housing suitable quarters for the administrative operations of the SMC;
8. To acquire, lease, own, establish, operate and maintain land, facilities, buildings, structures, equipment, or any other real or personal property with Lake County, Illinois in accordance with the adopted Lake County Comprehensive Stormwater Management Plan;
9. To sell, lease, exchange or dedicate any buildings, structures, equipment or any other real or personal property owned by the SMC to local governments and agencies or to private interests for the purpose of managing stormwater and for flood control in accordance with the adopted Lake County Comprehensive Stormwater Management Plan;
10. To apply for and accept gifts or grants of funds or property or financial or other aid from any public agency or private entity;
11. To extend funds for the expenses associated with the preparation, implementation and revision of the Lake County Comprehensive Stormwater Management Plan;
12. To collect, and cause to be collected, fees and service charges pertaining to the administration and enforcement of the Lake County Comprehensive Stormwater Management Plan; and to enforce the collection of such revenues by civil action or by any other means provided by law;
13. To sue or be sued;
14. To adopt, amend, or revise By-Laws to govern the function and operation of the SMC.

Appendix B
Goals and Objectives of the Lake County Stormwater Management Plan

These 1990 Goals and Objectives are wholly incorporated here as 2002 Goals and Objectives.

A. Goals

The goals of the Lake County Comprehensive Stormwater Management Plan are as follows:

GOAL #1. Protect existing and new development by minimizing the increase of stormwater runoff volume beyond that experienced under predevelopment conditions and by reducing peak stormwater flows, and by remedying, to the extent possible, existing drainage problems.

GOAL #2. Protect existing water resources, including lakes, streams, floodplains, and wetlands, from detrimental and unnecessary modification so that their beneficial functions are maintained and public expenditures and damages are minimized.

GOAL #3. Reduce or mitigate the environmentally detrimental effects of existing and future runoff in order to improve and maintain water quality and protect water related environments.

GOAL #4. Establish comprehensive basin plans* within each watershed, which quantify, plan for and manage stormwater flows within and among the jurisdictions in those watersheds.

GOAL #5. Provide for the short and long-term maintenance of natural and man-made drainageways and storage facilities in new and existing developments.

GOAL #6. Develop a comprehensive hydrologic, hydraulic, demographic and cartographic database using the best available and most appropriate technology to manage the stormwater, flood, and water quality data needs of the program.

GOAL #7. Establish a consistent, equitable and dedicated source of revenue in order to maintain the existing stormwater management system and undertake comprehensive watershed planning, stormwater regulations, and construction of stormwater facilities.

GOAL #8. Manage and operate the county program in an effective, equitable and cost-efficient manner.

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* Note: "Basin plans" equate to "sub-watershed management plans".

GOAL #9. Establish uniform, minimum, countywide stormwater management regulations while recognizing and coordinating with those stormwater programs effectively operating within the County.

GOAL #10. Promote the awareness and understanding of stormwater management issues by the practitioner and the layperson through an ongoing public information program.

GOAL #11. Coordinate with surrounding counties to ensure minimal negative impacts of inter-county stormwater runoff flows.

GOAL #12. Be in compliance with all applicable state and federal laws.

B. Objectives

GOAL #1. Protect existing and new development by minimizing the increase of stormwater runoff volume beyond that experienced under predevelopment conditions and by reducing peak stormwater flows, and by remedying, to the extent possible, existing drainage problems.

Objective 1: Ensure that property owners do not change the natural hydrologic system of their land so as to cause harm to adjoining property.

Objective 2: Require appropriate and adequate provisions for site drainage for all land development activity.

Objective 3: Control runoff rates from new developments for the full range of runoff events so that instream flow rates are not increased in the downstream watershed.

Objective 4: Provide and plan for stormwater storage where appropriate in preference to stormwater conveyance.

Objective 5: Minimize any adverse effects of stormwater runoff, which result from new highways, roads and streets.

Objective 6: Reduce damages resulting from existing drainage and flooding problems.

Objective 7: Where possible, reduce runoff rates from existing developments, which lack adequate stormwater control.

Traditionally, the common responses to drainage and flooding problems have been to route the water away from the site as quickly as possible. With more and more people living closer to each other, the prospects for harming another's property or investments are increasing. The open areas that once naturally held, absorbed and conveyed stormwater runoff are being paved over or modified to meet housing, commercial and industrial interests. Consequently, more responsibility is being

required of landowners and developers to protect neighboring properties from runoff damage. However, as growth continues, even more far reaching efforts will be required to assess the potential for cumulative downstream and upstream impacts, which may result from development. Thus, greater site control measures become a necessity of urban living.

The Northeastern Illinois Planning Commission has proposed the following hierarchy, which is considered appropriate for consideration by the Lake County Stormwater Management Planning Committee:

1. Preservation of the natural environment
2. Minimization of impervious surfaces
3. Use of vegetative swales and natural storage
4. Infiltration of runoff on site
5. Stormwater retention structures
6. Stormwater detention structures
7. Storm sewers

With respect to drainageways, natural water channels are, for the most part, adequate to convey runoff from smaller storms. The larger, less frequent storms (e.g., 100-year storm) require more area for storage and to carry off water. These are the floodplains. As development has altered the historic floodplain boundaries, stormwater finds its way into remaining lowlands and when these are at capacity, is then forced downstream at greater volumes.

Channel improvements, while seen by some as a solution, are simply not "nature's way". Over time, improvements such as dredging, widening, and rechannnelization will be altered by the forces of nature and require costly maintenance and eventual replacement, generally at public expense. Furthermore, channel improvements significantly alter both aquatic and riparian environments and potentially increase stream erosion. Finally, channel improvements do not solve the problems faced downstream. If the downstream channel is not sufficiently wide or deep to handle more water, flooding is only transferred to a different site. Therefore, storage is preferred.

GOAL #2. Protect existing water resources, including lakes, streams, floodplains, and wetlands, from detrimental and unnecessary modification so that their beneficial functions are maintained and public expenditures and damages are minimized.

Objective #1: Protect all water resources and adjacent riparian areas from unnecessary modification.

Objective #2: Protect the floodway from development except for defined appropriate uses, which will not impede flows nor increase flooding.

Objective 3: Maintain stormwater management and associated beneficial functions of wetlands through preservation to the greatest extent possible.

Objective 4: Strongly discourage development in the floodfringe.

Objective 5: Establish a financial mechanism to acquire remaining undeveloped lands, drainageways, and other significant storage areas, and coordinate any acquisitions with other stormwater management and flood control programs and with park and recreation programs.

Objective 6: Evaluate and develop programs to restore degraded water resources where feasible.

Objective 7: Require full mitigation for all physical and environmental impacts resulting from disturbances or alterations to water resources.

Nearly twenty percent of Lake County consists of lakes, streams, wetlands and floodplain areas. For years, these areas have naturally stored and conveyed the heaviest of rainstorms. Flooding on the other hand is a result of man's encroachment into lands that are physically suited to store excess water. Flooding is a natural process and floodplains are a vital part of that process. Under natural conditions, flooding causes little or no damage. Damage, however, is created when people unwisely build on floodplain lands. Not only is the new development in the floodplain subject to damage, but valuable storage area for storm and floodwaters is taken away. This causes flood levels to increase over the years. Since rain will continue to fall, the amount of land converted to impervious surfaces will determine the severity of flooding.

Various stormwater management and flood control measures (such as dams, levees, channels, etc.) have been used to protect areas that should have been avoided in the first place. Even with such improvements, people often relax with a false sense of security thinking they are free from harm and future worry. New developments in floodplains are still often approved with the "best technology" available. Only by a greater understanding of the larger basin dynamics can such proposed improvements be properly assessed.

Since so much of the county is composed of lowlands, an obvious solution is to address these areas first. Protection of the remaining water resources is vital to minimizing the amount of tax dollars that must be spent to remedy flood situations later. A basic step is simply to avoid building on flood prone or wet sites. This serves to protect a builder or landowner as well as the community at large. The community will benefit in future years through a reduction in the amount of tax dollars that must be spent to remedy flood damages. Properties that develop in the floodplains and wetlands of the county will eventually cost the owners and the community at large.

However, there must also be a means of fairly addressing those properties entirely within a floodplain, which may face severe limitations on development. These properties, when adjoining other publicly owned floodplain lands, should be acquired by the public. They should be acquired at fair market value and not at overly inflated prices to the detriment of taxpayers. A financing mechanism should be established to allow for these purchases and for similar multi-purpose programs such as wetland and aquifer protection.

GOAL #3. Reduce or mitigate the environmentally detrimental effects of existing and future runoff in order to improve and maintain water quality and protect water related environments.

Objective 1: Mitigate water quality impacts at the most site-specific or local level possible for all new development and evaluate opportunities to mitigate water quality impacts from existing developments.

Objective 2: Minimize the amount of erosion from development activity.

Objective 3: Utilize natural systems and solutions for water quality mitigation in preference to structural improvements.

The quality of our surface and ground waters has suffered as a result of the numerous waste products that find their way into the water. Polluted stormwater runoff (from oil and fuel products, pesticides, fertilizers, etc.) is much more difficult to control once in the water system. Testing can occur but it is often too late and only extended time or costly clean-up work can abate the pollution damage. On the other hand, when polluted runoff is controlled at the source, the areas affected are reduced. Source control of runoff is more effective and less costly than downstream management.

GOAL #4. Establish comprehensive basin plans within each watershed, which quantify, plan for and manage stormwater flows within and among the jurisdictions in those watersheds.

Objective 1: Require all drainage design solutions to be prepared with recognition of the watershed and its capacities as the base design constraint.

Objective 2: Basin plans will address future and existing drainage and flood control needs and will include, as necessary within each basin, floodplain management, flood control, floodway and floodplain mapping, centralized stormwater detention siting, water quality, maintenance needs identification, support data for regulatory programs and support data for program cost allocations.

The emphasis on watersheds and subwatersheds (basins) will continue throughout the program's implementation as watersheds are the natural means by which stormwater should be managed. Planning at the watershed level significantly increases the chances for a more reliable assessment of downstream project impacts.

The basin plans will produce the level of detail necessary to regulate stormwater management activities properly.

GOAL #5. Provide for the short and long-term maintenance of natural and man-made drainageways and storage facilities in new and existing developments.

Objective 1: Require regular, planned maintenance of stormwater management facilities for all new and existing developments and develop maintenance schedules for all natural and man-made drainageways.

Any new development which requires the construction of detention ponds or drainageways must provide assurances that the stormwater facilities will be maintained regularly in order to function as planned. Systems must operate at design capacity. Proper maintenance also leads to improved water quality. Maintenance programs for existing developments will be undertaken according to priority needs in watersheds.

Greater awareness on the part of future property owners buying into a new development will be necessary. Responsibilities for maintenance will be addressed early in the development approval process and homeowner's associations should be made aware of and be financially able to take care of any drainage facilities designated as their responsibility.

An examination of existing drainage problems has revealed that a lack of adequate maintenance is often the major cause. While retroactive maintenance requirements would be desirable, the public will need to bear the majority of costs associated with existing maintenance problems. Regular maintenance schedules will need to be developed for the various natural and man-made drainageways. This maintenance should be funded through special revenue sources such as service charges.

GOAL #6. Develop a comprehensive hydrologic, hydraulic, demographic and cartographic database using the best available and most appropriate technology to manage the stormwater, flood, and water quality data needs of the program.

Objective 1: Maintain a repository of stormwater management data for the county.

Objective 2: Compile pertinent stormwater management data and maintain the data, updated through cooperation with other agencies.

Objective 3: Encourage cooperative, cost-sharing efforts for data collection with other appropriate local, state and federal agencies.

Objective 4: Improve or prepare new floodway and floodplain maps, as necessary.

The availability of reliable data is crucial to an effective stormwater management program. While certain data will require several years to accumulate (e.g., rainfall, elevations, cross sections and profiles) demographic and map data relevant to the watersheds and basins will be needed quickly to maintain the most equitable program possible. The more complex and costly data requirements (such as contour mapping and hydraulic modeling) could be undertaken as joint ventures with other agencies and departments. Current floodplain mapping was completed in the 1970s and early 1980s. Changes in land use, rainfall predictions, modeling techniques and other factors create the potential for these important regulatory devices to become obsolete. It is critical that new mapping be prepared as part of the basin planning activities of the SMC.

GOAL #7. Establish a consistent, equitable and dedicated source of revenue in order to maintain the existing stormwater management system and undertake comprehensive watershed planning, stormwater regulations, and construction of stormwater facilities.

Objective 1: Work toward establishing the most equitable distribution of program costs and services possible.

Objective 2: Annually assess the administrative, maintenance, regulatory and capital needs of the county's watersheds and prepare an appropriate budget.

Objective 3: Maintain equity among watersheds. Revenues generated from watersheds will be spent to the greatest extent possible within the watershed generating the revenue.

Objective 4: Seek enabling legislation, if needed, to allow for the establishment of other fee mechanisms as options for funding operations, maintenance, enforcement and construction in order to otherwise shift costs away from dependence upon property taxes.

The cornerstone of many well-intentioned programs is all too often the funding for the program. The Lake County stormwater management program has focused, since its inception, on implementation and action. To assure action, as much information as possible regarding program costs is provided early in the program.

As with any new program, precise costs for all phases of the program cannot be determined up front. However, by careful monitoring of completed tasks and by collecting sound data on the various watersheds and basins of the county, the bases for program costs projections and differentiations can be set. Equity is a strong sentiment pervading this program in the early stages. Those areas or communities that have engaged in careful and wise stormwater management planning should not be penalized through taxes or regulations more appropriately oriented toward unprepared communities. Existing, older urban areas differ from the new growth communities of southern and central Lake County in types and degree of problems.

The lower income communities of the county can only afford so much for stormwater management given other priorities. These differences and types of situations have driven the program to a policy of maintaining a reasonable balance between program costs and benefits among the varying watersheds and basins.

Any shortcomings in existing statutory authority should be removed through new legislation. A full array of funding tools must be available for each county to select the appropriate options to meet its stormwater management program needs.

GOAL #8. Manage and operate the county program in an effective, equitable and cost-efficient manner.

Objective 1: Secure the necessary staff to manage the countywide stormwater management program.

Objective 2: The annual budgets proposed by the SMC will identify any proposed allocations for watershed projects and the justification for the funding distributions.

An efficiently operating program is the goal. With so many entities playing a role in stormwater management, an initial target of the stormwater management planning efforts of the early and mid 1980's was the minimization of bureaucracy and the elimination of redundancy. Whereas the legislation of 1987 did not allow for stormwater centralization through an independent stormwater management agency as sought initially, it will continue to be the SMC's desire to maximize efficiency to the greatest extent possible. The questions of equity will continue to be reviewed during each year's budgeting process to ensure the fairest distribution of funds is made.

GOAL #9. Establish uniform, minimum, countywide stormwater management regulations while recognizing and coordinating with those stormwater programs effectively operating within the County.

Objective 1: Require adherence, compliance and enforcement of the stormwater management policies and the regulatory tools adopted in conjunction with the plan.

Objective 2: Local governments will be responsible for enforcement of the plan and the associated regulations. Ultimate regulatory authority will be at a jurisdictional level consistent with the scale of the impacts of the activity being regulated.

Objective 3: Annually review the enforcement practices of local governments to ensure compliance.

Objective 4: Require local government and drainage district stormwater management regulations to be as complete, and at a minimum, at least as strict as those of the adopted stormwater management plan and associated regulations.

Objective 5: Develop a technical reference manual, which will provide guidelines and minimum performance requirements for many of the technical procedures essential to a comprehensive, stormwater management program. The manual shall not preclude the use of innovative technologies that can be shown to meet the minimum, countywide requirements and the spirit and intent of the plan.

Several studies and reports have pointed out the problems with fragmentation as obstacles to an effective stormwater management program. Because of the numerous entities with overlapping responsibilities for stormwater management, a fundamental step toward success is the adoption of a countywide ordinance containing minimum requirements to address stormwater management from a watershed-based perspective.

The effects of individual developments occurring in a given local jurisdiction may be felt outside the jurisdiction much more so than within. With a continually decreasing amount of unincorporated land to receive unwanted stormwater, municipalities need to realize they will, all too soon, be border to border with neighboring municipalities. Only through a watershed based, countywide approach can these repercussions be understood and controlled. The countywide ordinance is intended to address basic design criteria and methods; stormwater detention and conveyance; floodplain management; soil erosion and sediment control; and wetland, stream and lake protection.

Authority and responsibility, however are not intended to be taken away from municipalities. A base level of standards applied countywide is the intent—not a revocation of municipal authority. Cities and villages will continue to administer and enforce their own ordinances (with the addition of any countywide regulations not currently in effect). Municipalities may exceed the countywide standards. To ensure program success, the development practices of municipalities should be reviewed regularly. While countywide regulations establish minimum standards, creativity and innovation are encouraged. The proposed Technical Review Manual provides guidelines for implementation that are not narrow interpretations on how to do something exactly.

GOAL #10. Promote the awareness and understanding of stormwater management issues by the practitioner and the layperson through an ongoing public information program.

Objective 1: Maintain a staff position of Public Information Coordinator to inform the press, public officials and the local citizenry of stormwater management.

Objective 2: Publish a newsletter and other appropriate factual information as necessary to inform interested parties and individuals of its activities and progress.

Objective 3: Provide technical guidance and training programs to increase professional and layman awareness of the unique requirements of stormwater management in Lake County.

Objective 4: Keep all SMC and meetings and activities open to the public.

A fundamental premise underlying the stormwater management project is that citizens of Lake County be kept informed and involved in the planning process to the maximum extent possible. Information is the key to program support and must be made available to all levels of government in Lake County, including the voting public. The negative impacts on taxpayers from poorly planned developments and from the misunderstanding of floodplain functions and flood insurance programs have been frequently recognized, yet virtually ignored, due to lack of ongoing public information. Even funding and budget approval are dependent upon an adequate understanding by elected officials of the issues and problems to be solved.

The stormwater public information effort will greatly assist in filling this communication void. The SMC's public information coordinator, is a channel for objective information, not a public relations specialist or lobbyist. To achieve program objectives, an extensive public information program has already been established in the first phase of the program. Through a series of newsletters, brochures, fact sheets, public service announcements, media interviews, speaking engagements and a slide/video presentation, the program has successfully reached hundreds of individuals and groups. Yet, more people must become involved.

A simple awareness of the program's existence was the first objective of the public information effort. The knowledge that an effort was underway to identify and mitigate troublesome, recurring drainage and flooding problems was a relief to many. This awareness campaign was only the beginning. Citizen involvement efforts will continue as the plan is released for public review and action. Public information will be a continuing objective as successive program phases are entered.

GOAL #11. Coordinate with surrounding counties to ensure minimal negative impacts of inter-county stormwater runoff flows.

Objective 1: Coordinate implementation of the Lake County Stormwater Management Plan with all municipalities within the county including multi-county municipalities and all adjacent counties.

Objective 2: Work with adjacent counties during the development of basin master plans.

The stormwater planning legislation of 1987 specifically cited the requirement, "to coordinate the planning process with each adjoining county to ensure that stormwater projects would have no significant impacts on the levels or flows of stormwater in intercounty watersheds." Basic planning sense tells one that the same stormwater

which ignores municipal boundaries, ignores county boundaries. Thus, this plan can only be successfully implanted with the participation and input of adjoining counties.

GOAL #12. Be in compliance with all applicable state and federal laws.

Appendix C
Future Stormwater Management Program Cost Estimate Worksheets

Development of Full Time Equivalent (FTE) Average Annual Cost

The development of the average annual FTE cost used in the Cost Estimate Worksheets was based on SMC's internal budget including base salaries and overhead. This budget total was divided by the number of full-time SMC employees to produce a "fully loaded" annual cost for one FTE. It was determined that one full-time equivalent has an average annual cost of $90,000 and this value was used in the Cost Estimate Worksheets.

Assumptions used in these worksheets include the following:

- No inflation adjustments were made.
- Costs are for budget projection purposes; detailed costs should be developed on an annual basis.

FUTURE LAKE COUNTY SMC PROGRAM COST ESTIMATE WORKSHEET

PROGRAM ELEMENT: 1. Administration

ISSUE/OBJECTIVE: Administration of SMC divided into 9 sub-categories

COST ESTIMATE APPROACH:

Certain future administrative costs are expected to grow, as the future staff size of SMC increases. The labor breakdown for administrative costs is shown in the following table:

Category	Administrative	2001 FTEs
1.1	Liaison to County Government	0.07
1.2	Human Resources	0.37
1.3	Plant Management	0.12
1.4	PC/Network Support	0.20
1.5	Internal Communication and Coordination	0.78
1.6	Career Development and Training	0.51
1.7	Financial Management and Purchasing	0.33
1.8	Budget Development and Tracking	0.44
1.9	Commission Support	0.17
1.10	User Fee Administration*	0
TOTALS		2.99

* Note: Will not change as future staff size increases

Action Plan:

The baseline annual costs are unchanged at 2.99 FTEs costing $298,900 annually. Assume that enabling legislation for the user fee is obtained and that a user fee implementation study is completed in year 2, In year 3, 1 FTE will be required to administer the stormwater user fee. Categories, 1.2 through 1.9 are changed in proportion to the increased staff size over the course of the Action Plan. See Table 6-1 for the yearly cost increases.

Note: Throughout these costs worksheets, FTE is used to represent labor and overhead costs for one employee. The average FTE includes overhead costs for the organization and was computed to be $90,000 in the year 2001. In some cases, the staff mix of an existing program element is not well represented by the average cost of $90,000. In these cases, the existing program costs, which were developed using the true staff mix, are used to the predict the future program costs.

RESOURCES NEEDED TO PROVIDE/ PERFORM FUNCTION		Full Service Costs	Action Plan Costs
	TOTAL DIRECT COST $		
	STAFF REQUIRED: 3.99 $	388,900	357,000 (year 1)
	5.03 (final) FTEs	491,000	491,000 (year 10)
	TOTAL COST $	**491,000**	**357,000 (year 1)** **491,000 (year 10)**

TYPE OF COST: ☒ ANNUAL (RECURRING) ☐ NON-RECURRING

FUTURE LAKE COUNTY SMC PROGRAM COST ESTIMATE WORKSHEET

PROGRAM ELEMENT: 2.1 Watershed/Subwatershed Planning

ISSUE/OBJECTIVE: Complete 16 subwatershed plans that have not already been completed, initiated, or included in the Des Plaines River Watershed Study. Also complete hydrology and hydraulics for 3 North Branch Chicago River subwatersheds.

COST ESTIMATE APPROACH:

Cost estimates for watershed planning based on previous SMC experience with plans that are completed or underway and have been developed based on unit costs of a number of component planning steps. Some component planning and hydrologic study costs are based on the area of the subwatershed. Other costs such as natural resource assessment, hydraulic study and floodplain mapping costs are based on the stream length. Total stream lengths for the 19 subwatersheds to be studied were estimated from the hydrologic atlases.

Esimated watershed planning costs are included on Page 2. The seven subwatersheds that have already been completed, are underway, or are part of the Des Plaines Watershed study are not included in this estimate.

Watershed planning is included as a non-recurring cost. It is expected that SMC will outsource these studies. However, $950,000 (15% of the subtotal cost) of the $7,250,000 total cost is allocated for contract administration and staff review and analysis that will be completed by SMC staff. At the fully loaded FTE rate of $90,000, this equates to 10.6 FTEs. These FTEs should be distributed over the watershed planning execution time period.

The watershed plans will need to be revisited on a cyclical basis in order to update and revise the plan's components to reflect on ongoing watershed development and other unanticipated future changes.

Action Plan Cost:
Completion of the watershed plans are important steps to completing other tasks and initiatives by SMC. It was assumed that the watershed plans needed to be completed over a 5-year period (4 per year). Four subwatersheds per year provide for one subwatershed for each of the four major watersheds. The Action Plan costs were distributed accordingly. This results in the need for 2.1 FTEs per year at a cost of $189,000, and non-recurring costs for outsourcing the watershed plans at $1,260,000 per year.

Also, planning for various watershed projects will require administration for contracts, scheduling, coordination, prioritization and updates. This will require 1.0 FTE on an annual basis for $90,000 per year.

Following the initial effort to complete the watershed plans, it is estimated that approximately 10%, or $153,900, of the yearly costs for preparing the plans will be used on an ongoing basis to keep the plans up to date. The $153,900 will be an annual cost starting in year 6

			Full Service Costs	Action Plan Costs
RESOURCES NEEDED TO PROVIDE/ PERFORM FUNCTION	TOTAL DIRECT COST	$	6,300,000 153,900 (yearly 6+)	1,260,000 (years 1-5) 153,900 (yearly 6+)
	STAFF REQUIRED: 3.1 FTEs@ $90,000	$	950,000 (for watershed plans) 90,000 (yearly)	279,000 (years 1-5) 90,000 (years 5+)
	TOTAL COST	**$**	**7,340,000**	**1,539,000** **243,900 (yearly 6+)**

TYPE OF COST: ☐ ANNUAL (RECURRING) ☒ NON-RECURRING

LAKE COUNTY SMC WATERSHED PLANNING COST ESTIMATES

				Fox River	Des Plaines River	North Branch Chicago R.	Lake Michigan	TOTAL
	Planning Steps		Area (sq miles)	100.9	41.4	50	54	246.3
			Stream Length (m)	63.4	55.0	45.6	53.6	217.6
	Hydrology & Hydraulics	Unit	Unit Cost					
1	Aerial Topographic Mapping	Square Mile	$3,800	$383,420	$157,320	$190,000	$205,200	$935,940
	a. Ground Control Only	Square Mile	$600	$60,540	$24,840	$30,000	$32,400	$147,780
2	Stream Cross Section Surveying	Stream Mile	$6,980	$442,532	$383,900	$318,288	$374,128	$1,518,848
3	Watershed Modeling							
	a. Land Use Analysis (Calibration, Existing)	Square Mile	$1,200	$121,080	$49,680	$60,000	$64,800	$295,560
	b. Hydraulic Modeling	Stream Mile	$2,650	$168,010	$145,750	$120,840	$142,040	$576,640
	c. Hydrologic Modeling	Square Mile	$3,600	$363,240	$149,040	$180,000	$194,400	$886,680
	d. Floodplain Mapping	Stream Mile	$2,400	$152,160	$132,000	$109,440	$128,640	$522,240
4	Fully Developed Watershed Conditions							
	a. Land Use Analysis	Square Mile	$1,200	$121,080	$49,680	$60,000	$64,800	$295,560
	b. Floodplain Mapping	Stream Mile	$2,400	$242,160	$99,360	$120,000	$129,600	$591,120
	H&H Total			**$1,690,982**	**$1,042,530**	**$1,008,568**	**$1,141,608**	**$4,880,000**
	Other Planning Components							
5	Natural Resource Assessment							
	a. Stream Inventory	Stream Mile	$1,000	$63,400	$55,000	$0	$53,600	$172,000
6	Damage Assessment/Mitigation	Square Mile	$2,400	$242,160	$99,360	$120,000	$129,600	$591,120
7	Watershed Implementation Plan	Square Mile	$1,550	$156,395	$64,170	$0	$83,700	$304,265
8	Documentation	Square Mile	$560	$56,504	$23,184	$0	$2,466	$82,154
9	Implementation Plan Management	Year	$90,000	$90,000	$90,000	$0	$90,000	$270,000
	Other Costs Total			**$608,459**	**$331,714**	**$120,000**	**$359,366**	**$1,420,000**
	Subtotal			**$2,299,441**	**$1,374,244**	**$1,128,568**	**$1,500,974**	**$6,300,000**
9	Contract Administration	Square Mile	5%	$114,972	$68,712	$56,428	$75,049	$315,161
10	Staff Review and Analysis	Square Mile	10%	$229,944	$137,424	$112,857	$150,097	$630,323
	Total			**$2,640,000**	**$1,580,000**	**$1,300,000**	**$1,730,000**	**$7,250,000**

Source: Lake County SMC, 2001

Note: Excludes watersheds presently completed and the Des Plaines River
Note: 4.b. Floodplain Mapping will not be done, so costs are not included in this analysis
Note: 10. Project Implementation Costs are not included in this analysis. See Capital Improvement Cost Estimates
Note: Several Planning Components of the North Branch Watershed have already been completed

FUTURE LAKE COUNTY SMC PROGRAM COST ESTIMATE WORKSHEET

PROGRAM ELEMENT: 2.2 Regional Planning

ISSUE/OBJECTIVE: Planning efforts involving the Des Plaines River and areas outside of Lake County and coordination with those agencies responsible for other areas

COST ESTIMATE APPROACH:

Function not expected to expand in future program.

Estimated future program cost based on 2001 annual budget.

Action Plan Costs:
Regional Planning will require 0.35 FTE at $42,400 per year (based on existing program costs and staff mix).

RESOURCES NEEDED TO PROVIDE/ PERFORM FUNCTION			Full Service Costs	Action Plan Costs
	TOTAL DIRECT COST	$		
	STAFF REQUIRED: 0.35 FTE	$	42,400	42,400
	TOTAL COST	**$**	**42,400**	**42,400**

TYPE OF COST: ☒ ANNUAL (RECURRING) ☐ NON-RECURRING

FUTURE LAKE COUNTY SMC PROGRAM COST ESTIMATE WORKSHEET

PROGRAM ELEMENT: 2.3 Institutional Planning

ISSUE/OBJECTIVE: Planning related to defining SMC's roles and services for the present and future.

COST ESTIMATE APPROACH:

Function not expected to expand in future program, except for periodic performance of planning studies. Estimated future program cost based on SMC staff time utilized in 2001 annual budget. Assuming that enabling legislation is obtained, conduct user fee implementation study in year 2. It is estimated that this study, which will establish the basis for the user fee rate and the billing structure for the county, will cost $500,000.

Assume that

Action Plan:

Institutional Planning will require 0.27 FTE at a cost of $24,970 per year (based on existing program cost and staff mix).

RESOURCES NEEDED TO PROVIDE/ PERFORM FUNCTION			Full Service Costs	Action Plan Costs
	TOTAL DIRECT COST	$	500,000	500,000 (year 2)
	STAFF REQUIRED: 0.27 FTE	$	24,970	24,970
	TOTAL COST	**$**	**500,000 + 24,970 yearly**	**500,000 + 24,970 yearly**

TYPE OF COST: ☒ ANNUAL (RECURRING) ☒ NON-RECURRING

FUTURE LAKE COUNTY SMC PROGRAM COST ESTIMATE WORKSHEET

PROGRAM ELEMENT: 2.4.1 Flood Damage Reduction Project Planning

ISSUE/OBJECTIVE: Planning for various flood control projects throughout Lake County

COST ESTIMATE APPROACH:

Project planning costs can be estimated from the total cost of anticipated capital improvement projects. Capital costs for flood damage reduction projects are estimated as a total of $125 million on Worksheet 7.3. High priority capital improvement projects are estimated at $53.4 million.

Project planning for the full-service program would be $6.25 million, 5% of the total cost.

Project planning is estimated at $2.67 million, 5% of the total High Priority cost.

This function will be conducted by SMC staff and consultant outsourcing. Assume a 20/80 split between SMC staff and consultant outsourcing. This equates to 0.59 FTE for SMC.

Action Plan:

SMC should gradually transition to an intensive project planning program based on an increased effort coincident with completion of the watershed plans. However, a number of critical projects will continue to move forward ahead of the watershed plans.

Assume 0.59 FTE staff to provide SMC project planning for critical projects. Add consultant costs to address projects recommended in the watershed plans. Assume that the high priority projects will be completed over the 10 years, or at $213,600 per year, which is 80% of $2.67 million. The remainder will be SMC staff which equates to 0.59 FTE per year at a cost of $53,400 for 10 years.

In addition, there are planned expenditures for the Des Plaines Phase II project as follows:

2003 $168,000
2004 $162,000

RESOURCES NEEDED TO PROVIDE/ PERFORM FUNCTION		Full Service Costs	Action Plan Costs
	TOTAL DIRECT COST $	2,136,000	213,600
	STAFF REQUIRED: 0.59 FTE @ $90,000 $	534,000	53,400
	TOTAL COST $	**2,670,000**	**267,000**

TYPE OF COST: ☐ ANNUAL (RECURRING) ☒ NON-RECURRING

FUTURE LAKE COUNTY SMC PROGRAM COST ESTIMATE WORKSHEET

PROGRAM ELEMENT: 2.4.2 Water Quality Projects

ISSUE/OBJECTIVE: Planning water quality projects including erosion control projects, detention basin retrofits, and BMP implementation.

COST ESTIMATE APPROACH:

Water quality project planning costs can be estimated from the total cost of anticipated capital improvement projects. Water Quality capital improvement projects are estimated at $20.4 million from Worksheet 7.3.

Project planning is estimated at $1.02 million, 5% of the total Water Quality cost.

This function will be conducted by SMC staff and consultant outsourcing. Assume a 20/80 split between SMC staff and consultant outsourcing. This equates to 0.23 FTE SMC staff.

Action Plan:

SMC should gradually transition to an intensive project planning program based on an increased effort coincident with completion of watershed plans. However, a number of critical projects will continue to move forward ahead of the watershed plans.

Assume 0.23 FTE SMC staff to provide SMC project planning for critical projects. Add consultant costs to address projects recommended in the watershed plans. Assume that the high priority projects will be completed over 10 years, or at $81,600 per year, which is 80% of $1.02 million. The remainder will be SMC staff which equates to 0.23 FTE per year at a cost of $20,400 per year for 10 years.

RESOURCES NEEDED TO PROVIDE/ PERFORM FUNCTION			Full Service Costs	Action Plan Costs
	TOTAL DIRECT COST	$	816,000	81,600
	STAFF REQUIRED: 0.23 FTE @ $90,000	$	204,000	20,400
	TOTAL COST	**$**	**1,020,000**	**102,000**

TYPE OF COST: ☐ ANNUAL (RECURRING) ☒ NON-RECURRING

FUTURE LAKE COUNTY SMC PROGRAM COST ESTIMATE WORKSHEET

PROGRAM ELEMENT: 2.4.3 Wetland Project Planning

ISSUE/OBJECTIVE: SMC should develop wetland preservation plan relative to SMC mission to include potential banking opportunities.

COST ESTIMATE APPROACH:

Development of a wetland preservation plan and ongoing identification of wetland banking opportunities will be outsourced.

SMC has conducted potential banking study for the Upper Des Plaines River watershed. Based on watershed area, this effort cost $470 per square mile. This effort should be completed for the remainder of the county at a total cost of $195,000. Assume the project will be completed in one year. Cost includes 0.3 FTE staff time for coordination/management and input at a cost of $27,000. Consultant cost is $186,000.

These potential banking studies will be used to develop an overall wetland preservation plan.

As more multi-use projects that include wetlands are planned, annual wetland project planning is estimated to increase from the existing rate of 0.85 FTE to 1.0 FTE.

Action Plan:

The Wetland Project Planning will be a total cost of $195,000 broken down into 0.3 FTE at a cost of $27,000 and $186,000 for consultants. Wetland project planning in years 2+ will be conducted by 1.0 FTE.

RESOURCES NEEDED TO PROVIDE/ PERFORM FUNCTION		Full Service Costs	Action Plan Costs
	TOTAL DIRECT COST $	186,000	186,000
	STAFF REQUIRED: 1.0 FTE @ $90,000 $	90,000	27,000 (year 1), 90,000 in years 2+
	TOTAL COST $	**90,000**	**27,000 (year 1), 90,000 in years 2+**

TYPE OF COST: ☒ ANNUAL (RECURRING) ☒ NON-RECURRING

FUTURE LAKE COUNTY SMC PROGRAM COST ESTIMATE WORKSHEET

PROGRAM ELEMENT: 2.4.4 Restoration and Rehabilitive Projects

ISSUE/OBJECTIVE: Planning for restoration of streambanks, rehabilitation of conveyance systems, detention facilities and other various drainage system restoration and rehabilitive projects

COST ESTIMATE APPROACH:

Project planning costs can be estimated from the total cost of anticipated capital improvement projects. Capital costs for improvement projects are estimated as a total of $33.5 million on Worksheet 6.1.

Project planning is estimated at 5% of this cost for a total cost of $1,675,000. Assume a 20/80 split between SMC staff and consultant outsourcing for completing this planning effort.

Action Plan:

Assume that these projects are completed over a much longer time period compared to other more critical flood damage reduction projects. A 25-year implementation program would equal approximately $1.25 million per year for construction, and at 5%, $67,000 per year for project planning. For the 20/80 SMC and consultant outsourcing split, SMC staff requirements would be 0.15 FTE at $13,500 per year, with outsourcing equivalent to $53,500 per year. These costs would start in the Year 3 and extend for the 25-year planning period.

Assume R&R project planning will be completed for the County in Year 3 at a cost of $50,000.

Year 3: $50,000

Years 4+: $67,000

RESOURCES NEEDED TO PROVIDE/ PERFORM FUNCTION			Full Service Costs	Action Plan Costs
	TOTAL DIRECT COST	$	1,390,000	50,000 (year 3) 53,500 (year 4+)
	STAFF REQUIRED: 0.15 FTE @ $90,000	$	335,000	13,500 (year 4+)
	TOTAL COST	**$**	**1,675,000**	**67,000 (year 4+)**

TYPE OF COST: ☐ ANNUAL (RECURRING) ☒ NON-RECURRING

FUTURE LAKE COUNTY SMC PROGRAM COST ESTIMATE WORKSHEET

PROGRAM ELEMENT: 3.1 Non-Regulatory Technical Assistance

ISSUE/OBJECTIVE: Review and comment on work products from other agencies, municipalities/county or grassroots organizations; respond to technical questions; provide technical support for parallel initiatives by other agencies.

COST ESTIMATE APPROACH:

SMC currently provides this service using 0.4 FTE on an estimated annual basis (2001). This service be increased to provide more responsive and technically sound service. This increased service, which is especially needed by grassroots organizations, is best represented in the proposed budgets for watershed and project planning. Thus, assume that the current level of 0.4 FTE will be maintained in the future program.

Action Plan:

This will require 0.4 FTE at $39,700 per year (based on existing program and staff mix).

RESOURCES NEEDED TO PROVIDE/ PERFORM FUNCTION			Full Service Costs	Action Plan Costs
	TOTAL DIRECT COST	$		
	STAFF REQUIRED: 0.4FTE @ $90,000	$	39,700	39,700
	TOTAL COST	**$**	**39,700**	**39,700**

TYPE OF COST: ☒ ANNUAL (RECURRING) ☐ NON-RECURRING

FUTURE LAKE COUNTY SMC PROGRAM COST ESTIMATE WORKSHEET

PROGRAM ELEMENT: 3.2 Rain Gauge/Stream Gauge Network

ISSUE/OBJECTIVE: Operation and maintenance of rain and stream gauges in Lake County including adding 10 more rain gauges over the next 2 years.

COST ESTIMATE APPROACH:

Future increases in the rain gauge network will proportionally affect the time required to operate and maintain it. In 2001, the 9 gauge network required 0.3 FTE for operation and maintenance. It is estimated that 0.6 FTE for operation and maintenance.

Rain gauges cost $2,000 each and cost approximately $250 each per year to maintain.

Currently, the SMC budget has stream gauge operation and maintenance at an annual cost of $7,200. This is expected to remain constant until year 6 unless there is a major shift in stream gauge policy.

There are 7 combination discharge and stream gauges in Lake County. Eventually, the USGS will discontinue the operation and maintenance of these gauges. SMC will be responsible for the operation and maintenance of these gauges at $10,000 per gauge per year.

Action Plan:

Year 1: 0.4 FTE at a cost of 36,000. 5 rain gauges added at a total cost of $10,000. Maintenance of 14 rain gauges at a total cost of $3,500. Stream gauges operation and maintenance at a cost of $7,200.

Year 2: 0.6 FTE at a cost of $54,000. 5 more rain gauges added at a total cost of $10,000. Maintenance of 19 rain gauges at a total cost of $4,800. Stream gauges operation and maintenance at a cost of $7,200.

Year 3+: 0.6 FTE at a cost of $54,000. Maintenance of 19 rain gauges at a total cost of $4,800. Stream gauges operation and maintenance at a cost of $7,200.

Year 6+: Responsible for 4 USGS stream gauges for a cost of $10,000 per year per gaugewhich is broken down into $7500 direct cost and 0.03 FTEs at $2500 per gauge. Total costs: $30,000 direct cost, $10,000 for 0.12 FTEs.

Year 10+: Responsible for all 7 USGS stream gauges for total direct cost of $52,500 and $17,500 for 0.19 FTEs.

RESOURCES NEEDED TO PROVIDE/ PERFORM FUNCTION			Full Service Costs	Action Plan Costs
	TOTAL DIRECT COST	$	20,000 (10 new gauges) 7,200 (annual stream gauges) 4,800 (gauge maint.) 52,500 (USGS)	20,700 (year 1) 22,000 (year 2) 12,000 (year 3-5) 34,800 (year 6-9) 57,300 (year 10+)
	STAFF REQUIRED: 0.79 FTEs@ $90,000	$	71,500 (year 10+)	36,000 (year 1) 54,000 (years 2-5) 64,000 (year 6-9) 71,500 (year 10+)
	TOTAL COST	**$**	**56,700 (year 1)** **76,000 (year 2)** **66,000 (year 3+)** **128,800 (year 10+)**	**56,700 (year 1)** **76,000 (year 2)** **66,000 (year 3+)** **128,800 (year 10+)**

TYPE OF COST: ☒ ANNUAL (RECURRING) ☐ NON-RECURRING

FUTURE LAKE COUNTY SMC PROGRAM COST ESTIMATE WORKSHEET

PROGRAM ELEMENT: 3.3.1 Emergency Action Planning

ISSUE/OBJECTIVE: Preparation of emergency response plans and training of personnel for flood event responses

COST ESTIMATE APPROACH:

The first year of this task will be spent on preparation of the emergency response plan. Efforts during subsequent years will be spent providing training to SMC staff as well as to other agencies and municipalities.

It is estimated that preparation of the "Flood Annex" will be outsourced at a cost of $50,000.

Training in subsequent years will require 0.06 FTE.

Action Plan:

Flood Annex will be completed in the first year for $50,000 and training will commence following the completion of the flood annex at 0.06 FTE for $5,400 per year.

			Full Service Costs	Action Plan Costs
RESOURCES NEEDED TO PROVIDE/ PERFORM FUNCTION	TOTAL DIRECT COST	$	50,000 (year 1 only)	50,000 (year 1 only)
	STAFF REQUIRED: 0.06 FTE @ $90,000	$	5,400 (years 2+)	5,400 (years 2+)
	TOTAL COST	**$**	**50,000 + 5,400 yearly**	**varies**

TYPE OF COST: ☒ ANNUAL (RECURRING) ☒ NON-RECURRING

FUTURE LAKE COUNTY SMC PROGRAM COST ESTIMATE WORKSHEET

PROGRAM ELEMENT: 3.3.2 Flood Event Response

ISSUE/OBJECTIVE: SMC should develop and define its role in flood event warning systems and responses and also participate in the development of an early warning system.

COST ESTIMATE APPROACH:

SMC's role will be defined during the preparation of the "Flood Annex." Actual participation of SMC staff during flood event response will be on an as-needed basis and does not require programming. SMC should evaluate the feasibility of an early flood warning system. This will include ongoing interpretation as the rain gauge network is expanded. Assume $25,000 for consultant to evaluate the feasibility of an early flood warning system. A workshop should be done after the Flood Annex is completed.

Action Plan:

Assume $25,000 in the second year for consultant fees to evaluate the feasibility of an early flood warning system.

Workshops following the completion of the Flood Annex will require 80 hours of staff time which equates to 0.04 FTE per year at a cost of $3,600.

RESOURCES NEEDED TO PROVIDE/ PERFORM FUNCTION			Full Service Costs	Action Plan Costs
	TOTAL DIRECT COST	$	25,000 (year 2 only)	25,000 (year 2 only)
	STAFF REQUIRED: 0.04 FTE @ $90,000	$	3,600 (years 3+)	3,600 (years 3+)
	TOTAL COST	**$**	**25,000 + 3,600 yearly**	**varies**

TYPE OF COST: ☒ ANNUAL (RECURRING) ☒ NON-RECURRING

FUTURE LAKE COUNTY SMC PROGRAM COST ESTIMATE WORKSHEET

PROGRAM ELEMENT: 3.3.3 Post Flood Recovery

ISSUE/OBJECTIVE: SMC should prepare technical guidance to standardize flood damage reporting and establish a Flood Hazard Task Force.

COST ESTIMATE APPROACH:

SMC should prepare technical guidance to standardize flood damage reporting. This guidance must be distributed and SMC should maintain an ongoing education program so that municipalities and agencies are familiar with the procedures.

Preparation of the technical guidance and education and maintenance of the program is estimated to take 240 hours (0.12 FTE) in the first year and 40 hours (0.02 FTE) in subsequent years.

SMC should establish and coordinate a Flood Hazard Task Force. Organization and participation on this task force is estimated to require 80 hours (0.04 FTE) per year beginning in Year 1.

Action Plan:

The technical guidance should be completed in the third year with 0.12 FTE at $10,800.

The education program will recurr annually following completion of the technical guidance at 0.02 FTE at $1,800 per year.

The Flood Hazard Task Force will also be an annual cost at 0.04 FTEs at $3,600 starting in Year 1.

Summary:

Year 1-2: 0.04 FTE

Year 3: 0.12 FTE

Years 4 and higher: 0.06 FTE

RESOURCES NEEDED TO PROVIDE/ PERFORM FUNCTION		Full Service Costs	Action Plan Costs
	TOTAL DIRECT COST $		
	STAFF REQUIRED: 0.12 FTE @ $90,000 $	3,600 (year 1-2) 10,800 (year 3); 5,400 (years 4+)	3,600 (year 1-2) 10,800 (year 3); 5,400 (years 4+)
	TOTAL COST $	**5,400 (Years 4+)**	**3,600 (year 1-2) 10,800 (year 3); 5,400 (years 4+)**

TYPE OF COST: ☒ ANNUAL (RECURRING) ☐ NON-RECURRING

FUTURE LAKE COUNTY SMC PROGRAM COST ESTIMATE WORKSHEET

PROGRAM ELEMENT: 3.4.1 Data Collection

ISSUE/OBJECTIVE: Development of data for GIS coverages should increase to include stream inventories, watersheds, subbasins, floodplains, soils, wetlands, culverts and bridges, and stormwater facilities. Also development of advanced analytical tools for use by SMC

COST ESTIMATE APPROACH:

A data/GIS needs assessment should be performed. This effort identify and prioritize data needs in Lake County. It would also identify existing sources of information and data that would have to be acquired. This effort will be completed by 0.1 FTE in the Year 2.

System inventory work has previously been conducted by a summer employee. This is an annual cost of $7,000. Data from ongoing projects should also be brought into the system, this is estimated to require 0.1 FTE on an ongoing basis. This combined level of effort is estimated to continue during the watershed planning project period (5 years). After this time, data maintenance will be performed by 0.1 FTE.

SMC will also become more efficient in advanced modeling and analytical tools which will be 40 hours per year (0.02 FTE) at a cost of $1800 starting in Year 2

Action Plan:

Do the data/GIS needs assessment in Year 2. Use summer employee for 5 years (until Year 7) to assist with data acquisition. Data maintenance will be performed by 0.1 FTE starting in year 6.

Year 1: Continue with existing GIS services ($6,900 based on staff mix)

Years 2-5: $7,000 direct cost plus 0.12 FTE

Years 6+: 0.12 FTE

RESOURCES NEEDED TO PROVIDE/ PERFORM FUNCTION			Full Service Costs	Action Plan Costs
	TOTAL DIRECT COST	$	7,000 (years 2-6)	7,000 (years 2-6)
	STAFF REQUIRED: 0.12 FTE @ $90,000	$	10,800 (yearly)	10,800 (yearly 2+)
	TOTAL COST	**$**	**$17,800**	**varies**

TYPE OF COST: ☒ ANNUAL (RECURRING) ☐ NON-RECURRING

FUTURE LAKE COUNTY SMC PROGRAM COST ESTIMATE WORKSHEET

PROGRAM ELEMENT: 3.4.2 Information Distribution

ISSUE/OBJECTIVE: Distribution of GIS data to the public.

COST ESTIMATE APPROACH:

SMC does not currently provide this service.

Once more data is collected, there will be a greater number of requests for information.

Assume that stream inventory GIS data will be distributed and it is estimated to take 40 hours (0.02 FTE) per year (less than one hour per week).

Action Plan:

Data distribution will occur on an annual basis. At the present time, this is estimated to require 0.02 FTE at a cost of $1,800 per year. This could change if there is a major shift in GIS policy and procedure at a future time.

Year 2+: 0.02 FTEs @ $1800

RESOURCES NEEDED TO PROVIDE/ PERFORM FUNCTION		Full Service Costs	Action Plan Costs
	TOTAL DIRECT COST $		
	STAFF REQUIRED: 0.02 FTE @ $90,000 $	1,800	1,800 (Year 2+)
	TOTAL COST $	**1,800**	**1,800**

TYPE OF COST: ☒ ANNUAL (RECURRING) ☐ NON-RECURRING

FUTURE LAKE COUNTY SMC PROGRAM COST ESTIMATE WORKSHEET

PROGRAM ELEMENT: 3.5 Floodplain Mapping/Management

ISSUE/OBJECTIVE: Regulatory floodplain maps should be prepared based on the analyses and maps prepared for the watershed plans. Depressional floodplain areas should also be compiled and included on the regulatory floodplain maps. Coordination of floodplain studies and preparation and maintenance of floodplain data and maps. Eventually conduct Letter of Map Revision (LOMR) reviews.

COST ESTIMATE APPROACH:

SMC should compile and maintain regulatory floodplain maps based on the floodplain maps prepared for the watershed plans and approved LOMRs. These maps should also include depressional floodplain areas. Assume that once LOMRs and depressional floodplain areas are added, that the complilation and preparation of the regulatory floodplain maps will be approximately 50% of the cost to the prepare the watershed plans floodplain maps. Based on the estimate of 218 stream miles to be mapped, this would be a cost of $261,600. Assume that the 25% of the mapping is completed by SMC staff (0.15 FTE) over the first five years. Map maintenance is estimated to require 0.1 FTE after the initial preparation period.

SMC should work with FEMA to assume responsibility for coordinating the County's NFIP maps and mapping responsibilities. Phase I of the process will include the maintenance of flood study data clearinghouse, and the preparation of up-to-date maps based on approved Letters of Map Revision. It is estimated that each LOMR will require 2 hours for an engineer and 8 hours for GIS/mapping staff. Assuming that there are approximately 10 LOMRs per year in Lake County, this is a combined annual need of 80 hours, or 0.04 FTE.

Phase II of the program will include reviewing proposed LOMRs. LOMRs vary in complexity, but reviews are estimated to require on average 20 hours for review and comment. Assuming that there are 10 reviews per year, this will require 200 hours annually, or 0.10 FTE.

Action Plan:

Assume that floodplain map preparation begins in the first year at a cost of 39,200 per year, plus 0.15 FTE and continues through year 5. Starting in year 6, map maintenance will require 0.1 FTE.

Assume that tracking of LOMRs for the floodplain map management begins in the first year at an annual cost of 0.04 FTE.

Assume that LOMR reviews are added in year 6 at an additional annual cost of 0.10 FTE.

RESOURCES NEEDED TO PROVIDE/ PERFORM FUNCTION		Future Service Costs	Action Plan Costs
	TOTAL DIRECT COST $	196,200	$39,200 (years 1-5)
	STAFF REQUIRED: 0.21 FTE @ $90,000 $	19,350	17,100 (years 1-5), 21,600 (years 6+)
	TOTAL COST $	**196,200 + 19,350 annually**	**56,300 (years 1-5), 21,600 (years 6+)**

TYPE OF COST: ☒ ANNUAL (RECURRING) ☒ NON-RECURRING

FUTURE LAKE COUNTY SMC PROGRAM COST ESTIMATE WORKSHEET

PROGRAM ELEMENT: 3.6 Non-Regulatory Wetland Program

ISSUE/OBJECTIVE: SMC should perform jurisdictional wetland determinations for all developments in Lake County and wetland delineations for small private property owners.

COST ESTIMATE APPROACH:

SMC will provide a determination of jurisdictional wetlands. SMC has estimated that it will will conduct approximately 370 jurisdictional determinations per year and that 60% of these will be in incorporated areas served by SMC. . Assume that SMC will perform approximately 40 wetlands delineations per year at 12 hours per delineation (0.23 FTE). SMC has estimated that each jurisdictional determination will require 7 hours to complete (3 hours for clerical time and 4 hours for wetland specialist). This translates to 0.75 FTE (370 actions x 7 hours x 60%) for jurisdictional determinations and 0.23 FTE for wetland delineations.

Action Plan:

The non-regulatory wetland program should start in the first year as an annual cost with 0.98 FTE at a cost of $88,200.

RESOURCES NEEDED TO PROVIDE/ PERFORM FUNCTION			Future Service Costs	Action Plan Costs
	TOTAL DIRECT COST	$		
	STAFF REQUIRED: 0.98 FTE @ $90,000	$	88,200	88,200
	TOTAL COST	**$**	**88,200**	**88,200**

TYPE OF COST: ☒ ANNUAL (RECURRING) ☐ NON-RECURRING

FUTURE LAKE COUNTY SMC PROGRAM COST ESTIMATE WORKSHEET

PROGRAM ELEMENT: 3.7 NPDES Phase II

ISSUE/OBJECTIVE: SMC should provide substantial support to local jurisdictions as a Local Qualifying Program. Prepare guidance for good housekeeping and illicit connections for use by locals. SMC should provide technical assistance and support for the other four components of Phase II.

COST ESTIMATE APPROACH:
SMC should prepare a guidance document for the four components: Public Involvement, Public Education, Post Development Runoff Control, and Construction Runoff Control. The document will demonstrate how Lake County and its communties will comply with the Phase II rules. Support for construction runoff control and post development runoff control will be provided through SMC's existing regulatory program. Public Involvement and Public Education functions will be provided through SMC's Public Information program. The guidance document will reference the existing WDO and the elements to be provided by SMC in functions 5.1 Public Education and 5.4 Public Input. SMC will also develop the measurable goals that can be used to document the effectiveness of both individual control measures and the storm waterprogram as a whole. Development of the program will in year 1 and is estimated to require 160 hours (0.08 FTE). Subsequent documentation of the program will occur in years 2 and above and will require 40 hours per year (0.02 FTE).

SMC has already prepared an illicit discharge evaluation program. This program should be updated for use throughout the county, this cost is estimated at $25,000. In addition, SMC should develop guidelines for pollution prevention and good housekeeping that can distributed to municipalities. The cost to prepare this guidance material is estimated at $50,000.

Finally, coordination and administration of the partial countywide Phase II Program and providing technical assistance for local jurisdictions is estimated to require 4 hours per week (0.1 FTEs)

Action Plan:
Prepare guidance documents and provide technical guidance to local jurisdictions for a combined effort of 0.18 FTE. Prepare illicit discharge program and pollution prevention and good housekeeping documentation in year 1 for $75,000. Continue to administer program in years 2 and above for a combined effort of 0.12 FTE.

RESOURCES NEEDED TO PROVIDE/ PERFORM FUNCTION		Future Service Costs	Action Plan Costs
	TOTAL DIRECT COST $	75,000 (year 1 only)	75,000 (year 1 only)
	STAFF REQUIRED: 0.18 FTE @ $90,000 $	16,200 (year 1); 10,800 (years 2+)	16,200 (year 1); 10,800 (years 2+)
	TOTAL COST $	**91,200 + 10,800 yearly**	**varies**

TYPE OF COST: ☒ ANNUAL (RECURRING) ☒ NON-RECURRING

FUTURE LAKE COUNTY SMC PROGRAM COST ESTIMATE WORKSHEET

PROGRAM ELEMENT: 3.8.1 Parcel Drainage Problem Resolution

ISSUE/OBJECTIVE: Drainage problem at parcel level, not involving WDO violation

COST ESTIMATE APPROACH:

This ongoing service is not a part of the original SMC role. However, this service is a necessary service that SMC can best provide when responsible jurisdiction does not have adequate technical expertise. In the past, detailed records have not been kept regarding the amount of time SMC staff expends on these issues.

Based on interviews with SMC staff, it is estimated that 4 hours per week (0.1 FTE) is required to address parcel level drainage problems.

Action Plan:

Parcel drainage problem resolutions will require 0.1 FTE at a cost of $9,000 per year.

RESOURCES NEEDED TO PROVIDE/ PERFORM FUNCTION		Full Service Costs	Action Plan Costs
	TOTAL DIRECT COST $		
	STAFF REQUIRED: 0.1 FTE @ $90,000 $	9,000	9,000
	TOTAL COST $	**9,000**	**9,000**

TYPE OF COST: ☒ ANNUAL (RECURRING) ☐ NON-RECURRING

FUTURE LAKE COUNTY SMC PROGRAM COST ESTIMATE WORKSHEET

PROGRAM ELEMENT: 3.8.2 Local Drainage Problem Resolution

ISSUE/OBJECTIVE: Investigation of drainage problems at local or subdivision level.

COST ESTIMATE APPROACH:

SMC provides this service on an as-needed basis. Although they occur less frequently than parcel level drainage problems, they are also more involved. The actual solution to these problems may be developed under project planning and implemented under capital improvements, or may be the responsibility of a developer or municipality. This function represents the effort to work with residents and/or municipalities to better identify the causes of problems and develop a strategy for its solution. This work will be more involved than parcel level solutions, but is expected to occur less frequently as SMC only provides this service on an as-needed basis.

Action Plan Cost:

It is estimated that local drainage problem resolution will also require 4 hours per week (0.1 FTE).

RESOURCES NEEDED TO PROVIDE/ PERFORM FUNCTION		Full Service Costs	Action Plan Costs
	TOTAL DIRECT COST $		
	STAFF REQUIRED: 0.1 FTE @ $90,000 $	9,000	9,000
	TOTAL COST $	**9,000**	**9,000**

TYPE OF COST: ☒ ANNUAL (RECURRING) ☐ NON-RECURRING

FUTURE LAKE COUNTY SMC PROGRAM COST ESTIMATE WORKSHEET

PROGRAM ELEMENT: 3.8.3 Subwatershed/Regional Drainage Problem Resolution

ISSUE/OBJECTIVE: Drainage problem at subwatershed or regional scale, referral by another agency

COST ESTIMATE APPROACH:

Subwatershed or regional drainage problem resolutions are best addressed through watershed planning, project planning and likely solved through capital improvement projects. This functional sub-category includes the time to coordinate and work with other agencies to identify and track problems of this scale.

The actual steps necessary to develop and implement the solution are included in other functions. Each problem is estimated to take 4 days to prepare correspondence, interact with municipal engineers/administraters, and visit the site. It is estimate that there may be 4 of these problems per year. This drainage problem resolution category is estimated to require 128 hours per year, (0.06 FTE).

Action Plan Costs:

Subwatershed/regional drainage problem resolutions will require 0.06 FTE at $5,400 per year.

RESOURCES NEEDED TO PROVIDE/ PERFORM FUNCTION		Full Service Costs	Action Plan Costs
	TOTAL DIRECT COST $		
	STAFF REQUIRED: 0.06 FTE @ $90,000 $	5,400	5,400
	TOTAL COST $	**5,400**	**5,400**

TYPE OF COST: ☒ ANNUAL (RECURRING) ☐ NON-RECURRING

FUTURE LAKE COUNTY SMC PROGRAM COST ESTIMATE WORKSHEET

PROGRAM ELEMENT: 3.9 Citizen Inquiry Response System (CIRS)

ISSUE/OBJECTIVE: Citizen Inquiry Response System addresses and tracks resolution of citizens' drainage and flooding problems

COST ESTIMATE APPROACH:

The level of effort required to provide service is ultimately a function of the population and the amount of development in Lake County. In 2001, this service required 0.29 FTE. The population in Lake County is expected to grow by just over 1% per year. Assuming that the need for the CIRS program is roughly proportional to the population, this does not represent a significant increase in effort from one year to the next. Over ten years, this would represent a greater than 10% increase. However, at that point in time it is expected that maintenance and capital improvement programs would eliminate some problems and cap the need for an increase in this program.

Estimated future program cost based on 2001 annual budget.

Action Plan:

CIRS will require 0.29 FTEs a $26,100 per year.

RESOURCES NEEDED TO PROVIDE/ PERFORM FUNCTION		Full Service Costs	Action Plan Costs
	TOTAL DIRECT COST $		
	STAFF REQUIRED: 0.29 FTE @ $90,000 $	26,100	26,100
	TOTAL COST $	**26,100**	**26,100**

TYPE OF COST: ☒ ANNUAL (RECURRING) ☐ NON-RECURRING

FUTURE LAKE COUNTY SMC PROGRAM COST ESTIMATE WORKSHEET

PROGRAM ELEMENT: 4.1 Permit Process
4.2 Inspection Services
4.3 Enforcement Actions
4.4 Regulatory Technical Assistance

ISSUE/OBJECTIVE: See table below.

COST ESTIMATE APPROACH:

Future regulatory services are not expected to increase significantly beyond that provided in 2001, except to account for implementation of the new isolated wetlands provision. Approximately 120 isolated wetland permits are anticipated per year. There are various categories of permits, that on average are estimated to require 16 hours each for review. The isolated wetlands permitting program is estimated to require 0.97 FTE. (Jurisdictional determinations are included in Function 3.6) Increased inspection and enforcement programs are anticipated. The growth projections used in the costs analyses were based on predictions of growth in Lake County that indicate a relatively constant rate of growth as that experienced during the 1990s. This equates to a constant level of development submittals. Efforts to provide regulatory services, 4.2 through 4.4 shown below, are estimated to increase by 15%.

	Description	2001 FTE	Future Program FTE
4.1	Review and processing of Watershed Development Permit applications which will include wetland permitting	1.97	2.94
4.2	Site Inspections for conformance with permitted conditions which will include wetland permitting	0.63	0.73
4.3	Enforcement actions for violations of the WDO which will include wetland permitting	0.43	0.49
4.4	Technical assistance for implementation of the WDO which will include wetland permitting	0.56	0.64

Action Plan:
These functions require a total of 4.8 FTEs. Level of service will be increased in first year of action plan to account for adopted isolated wetlands program.

RESOURCES NEEDED TO PROVIDE/ PERFORM FUNCTION		Full Service Costs	Action Plan Costs
	TOTAL DIRECT COST $		
	STAFF REQUIRED: 4.8 FTE @ $90,000 $	432,000	432,000
	TOTAL COST $	**432,000**	**432,000**

TYPE OF COST: ☒ ANNUAL (RECURRING) ☐ NON-RECURRING

FUTURE LAKE COUNTY SMC PROGRAM COST ESTIMATE WORKSHEET

PROGRAM ELEMENT: 4.5 Ordinance/TRM Updates

ISSUE/OBJECTIVE: Updates to the WDO and TRM as needed

COST ESTIMATE APPROACH:

Function not expected to expand in future Program.

Estimated future program cost based on 2001 annual budget.

Action Plan:

Ordinance and TRM updates will require 0.28 FTEs at a cost of $43,300 per year (based on existing program and staff mix).

RESOURCES NEEDED TO PROVIDE/ PERFORM FUNCTION		Full Service Costs	Action Plan Costs
	TOTAL DIRECT COST $		
	STAFF REQUIRED: 0.28 FTE @ $90,000 $	43,300	43,300
	TOTAL COST $	**43,300**	**43,300**

TYPE OF COST: ☒ ANNUAL (RECURRING) ☐ NON-RECURRING

FUTURE LAKE COUNTY SMC PROGRAM COST ESTIMATE WORKSHEET

PROGRAM ELEMENT: 4.6 Wetland Permitting Authority

ISSUE/OBJECTIVE: Permitting under Section 404 and the WDO which should include an agreement with the Corps to expedite review process.

COST ESTIMATE APPROACH:

SMC, along with Lake County Planning, Building and Development department, will continue to be responsible for isolated wetlands per an Interagency Cooperation Agreement with the U.S. Army Corps of Engineers. SMC will retain wetland specialists to conduct office reviews, site inspections and other activities to expedite any permit or review processes related to wetlands. This will require approximately 2250 hours per year, or 1.08 FTE.

Action Plan:
Isolated wetlands responsibilities will be initiated in year 3 and will require 1.08 FTE per year.

			Future Service Costs	Action Plan Costs
RESOURCES NEEDED TO PROVIDE/ PERFORM FUNCTION	TOTAL DIRECT COST	$		
	STAFF REQUIRED: 1.08 FTE @ $90,000	$	97,200	97,200
	TOTAL COST	**$**	**97,200**	**97,200**

TYPE OF COST: ☒ ANNUAL (RECURRING) ☐ NON-RECURRING

FUTURE LAKE COUNTY SMC PROGRAM COST ESTIMATE WORKSHEET

PROGRAM ELEMENT: 5.1 General Public Information

ISSUE/OBJECTIVE: SMC should provide public involvement and information as a component of NPDES Phase II.

COST ESTIMATE APPROACH:

SMC's existing program provides 1 FTE for Public Information. SMC should expand the existing program to meet needs in the county and to satisy NPDES Phase II requirement.

USEPA estimates that the Public Education requirement for NPDES Phase II will range from $0.02 to $0.34 per capita per year. Assuming that SMC will provide this function for all of Lake County and that a per capita cost of $0.25 will be budgeted, the future public education and information program will cost $161,000 per year (2000 population = 644,356).

SMC will arrange for 3 public information meetings per year per watershed. Each of these meetings will require 24 hours to prepare, thus requiring a total effort of 288 hours. Another 250 hours per year will be budgeted for additional brochures and school programs. This will result in the need for an additional 0.25 FTE, above and beyond the current program. The remainder of the annual budget will be needed to cover the direct expenses of the public information program such as printing, advertising, etc.

Action Plan:

SMC should develop the plan for NPDES Phase II and organize initial meetings in 2002. The plan can then be implemented in 2003, the first year of the action plan.

RESOURCES NEEDED TO PROVIDE/ PERFORM FUNCTION			Full Service Costs	Action Plan Costs
	TOTAL DIRECT COST	$	48,000	48,000
	STAFF REQUIRED: 1.25 FTE @ $90,000	$	113,000	113,000
	TOTAL COST	**$**	**161,000**	**161,000**

TYPE OF COST: ☒ ANNUAL (RECURRING) ☐ NON-RECURRING

FUTURE LAKE COUNTY SMC PROGRAM COST ESTIMATE WORKSHEET

PROGRAM ELEMENT: 5.2 Technical Training

ISSUE/OBJECTIVE: Seminars, workshops and training for municipal leaders, consultants and the public

COST ESTIMATE APPROACH:

SMC staff prepare, organize and facilitate technical training sessions. For the 2001 budget, SMC utilized 0.16 FTEs for technical training programs. The countywide needs survey identified the need for additional training sessions, especially ones that would target specific audiences. SMC should conduct an additional 4 training sessions on various subjects per year. It is estimated that each training session will require 80 hours to develop, coordinate and conduct. This will require an additional 0.15 FTEs for a total of 0.31 FTEs.

Action Plan:

Technical Training will require 0.31 FTEs at $27,900 per year.

RESOURCES NEEDED TO PROVIDE/ PERFORM FUNCTION			Full Service Costs	Action Plan Costs
	TOTAL DIRECT COST	$		
	STAFF REQUIRED: 0.31 FTE @ $90,000	$	27,900	27,900
	TOTAL COST	**$**	**27,900**	**27,900**

TYPE OF COST: ☒ ANNUAL (RECURRING) ☐ NON-RECURRING

FUTURE LAKE COUNTY SMC PROGRAM COST ESTIMATE WORKSHEET

PROGRAM ELEMENT: 5.3 Public Input

ISSUE/OBJECTIVE: Open door policy, monthly commission meetings, public review and comment, stakeholder committees should all be expanded and enhanced.

COST ESTIMATE APPROACH:

USEPA estimates that Public Input requirements for NPDES Phase II will range from $0.19 to $0.20 per capita per year. Assuming that SMC will provide this function for all of Lake County and that $0.19 per capita will be budgeted, the future public input program will cost $122,000 per year (2000 population = 644,356). Much of function is provided by the open door policy of SMC and other programs such as CIRS. Additional opportunities will be provided by watershed meetings, watershed planning coordination, and project planning coordination, all of which will provide opportunities for public input. It is estimated that approximately approximately 240 hours per year (0.12 FTE) will be needed to track, monitor and document public input, both to SMC and to the municipalities.

Action Plan:

Function to be tracked and documented on an annual basis, requiring 0.12 FTE.

RESOURCES NEEDED TO PROVIDE/ PERFORM FUNCTION		Full Service Costs	Action Plan Costs
	TOTAL DIRECT COST $		
	STAFF REQUIRED: 0.12 FTE @ $90,000 $	10,800	10,800
	TOTAL COST $	**10,800**	**10,800**

TYPE OF COST: ☒ ANNUAL (RECURRING) ☐ NON-RECURRING

FUTURE LAKE COUNTY SMC PROGRAM COST ESTIMATE WORKSHEET

PROGRAM ELEMENT: 6.1 Restoration and Rehabilitative Projects

ISSUE/OBJECTIVE: Implement Projects for restoration of streambanks and natural waterways, rehabilitation of conveyance systems, detention facilities and other various drainage system facilities.

COST ESTIMATE APPROACH:

As part of project planning, SMC should develop a restoration and rehabilitation plan for the County. In the absence of this plan, potential restoration and rehabilitation projects were estimated as follows.

IEPA conducts surface water monitoring to identify water quality and problem areas in Illinois. Rivers and lakes are rated as good, fair or poor based on physical, chemical and biological data. A "good" rating means a river or lake meets the needs of all designated uses. "Fair" means water quality has been impaired and the waterbody meets some, but not all, of its designated uses. A waterbody whtat is rated as "poor" has water quality that has been severly impaired and cannot support designated uses to any degree.

In Lake County, IEPA has identified 23 miles of poor quality rivers and 58 miles of fair quality rivers. There are 27 fair quality lakes and 4 poor quality lakes. Good quality rivers and lakes were not tabulated as there would be no known need for rehabilitative or restoration projects.

For rivers, the IEPA determined that habitat alterations caused impairment on 49% of impaired stream miles. Thus, it is estimated that restoration projects are needed on 40 miles of Lake County rivers. Minor restoration projects may cost $50 to $150 per linear foot of streambank, while major restoration projects may cost over $500 per linear foot of streambank. Accounting for both banks of river, these projects typically range from $100 to $1000 per linear foot of stream. Assuming that projects would be implemented on 25 percent of total length of impaired rivers and using an average cost of $500 per linear foot, restoration and rehabilitation projects total $26.4 million.

Various water quality problems were found to be responsible for the remainder of impaired rivers. It is estimated that 1 rehabilitative project per mile of impaired river will be needed at a cost of $100,000 each. This equates to 40 projects for a total of $4 million.

It is also estimated that 2 rehabilitative projects (likely more than one impaired source) per impaired lake will be implemented at a cost of $50,000 each. These projects will have a total cost of $3.1 million.

The total estimated cost for project implementation is $33.5 million.

Action Plan:

Restoration and rehabilitation (R&R) projects are important to preserve and maintain the integrity of the county's drainage and flood management system. However R&R projects must compete with flood damage reduction projects for limited maintenance and construction dollars.

Assume a 25 year implementation program for R&R projects which equates to $ 1.34 million per year after the planning is complete. These costs begin in Year 6

RESOURCES NEEDED TO PROVIDE/ PERFORM FUNCTION			Full Service Costs	Action Plan Costs
	TOTAL DIRECT COST	$	33,500,000	1,340,000 (year 6+)
	STAFF REQUIRED: FTE @ $90,000	$		
	TOTAL COST	**$**	**33,500,000**	**1,340,000**

TYPE OF COST: ☐ ANNUAL (RECURRING) ☒ NON-RECURRING

FUTURE LAKE COUNTY SMC PROGRAM COST ESTIMATE WORKSHEET

PROGRAM ELEMENT: 6.2.1 Maintenance Program Management

ISSUE/OBJECTIVE: Develop a maintenance program with a manual of practices and ongoing management of countywide maintenance program.

COST ESTIMATE APPROACH:

SMC staff will prepare the countywide maintenance program and develop a manual of practices. The countywide maintenance program will include the preparation of a detailed countywide inventory of stormwater facilities. The full service stormwater plan assumes sufficient revenues generated by SMC to meet interjurisdictional and trunk system maintenance needs. For the full-service maintenance program of $2 million, it is estimated that 0.75 FTE will be needed to coordinate inter-jurisdictional maintenance activities and provide support for the program.

Action Plan:

SMC staff should prepare the countywide maintenance program in the fourth year, working closely with local municipalities, the county, drainage districts and other entities with responsibility for maintenace. This is estimated to require 0.75 FTE for the $2 million maintenance program. This assumes that more critical flood damage reductions efforts are addressed in the first four years. In year five, SMC would outsource for development of a manual of practices at a cost of $100,000. Assume 0.75 FTE to coordinate maintenance initiatives starting in year 5.

Summary:

Year 5+: 0.75 FTE

Year 5: $100,000

RESOURCES NEEDED TO PROVIDE/ PERFORM FUNCTION			Full Service Costs	Action Plan Costs
	TOTAL DIRECT COST	$	100,000 (year 5)	100,000 (year 5)
	STAFF REQUIRED: 0.75 FTE @ $90,000	$	67,500 (years 5+)	67,500 (years 5+)
	TOTAL COST	**$**	**67,500 yearly plus 100,000 year 5**	**67,500 yearly plus 100,000 year 5**

TYPE OF COST: ☒ ANNUAL (RECURRING) ☒ NON-RECURRING

FUTURE LAKE COUNTY SMC PROGRAM COST ESTIMATE WORKSHEET

PROGRAM ELEMENT: 6.2.2/6.2.3 Regional/Local Components Maintenance

ISSUE/OBJECTIVE: Maintenance of drainage system components throughout Lake County

COST ESTIMATE APPROACH:

Appropriation for regional maintenance will be determined by and coordinated through SMC's Maintenance Program Management.

A detailed countywide system inventory was prepared in 1989 and used in the 1990 Lake County Comprehensive Stormwater Management Plan.

The total quantities of drainage system components were increased based on changes in land use since 1990. Components such as catch basins, storm sewer and outfalls were increased based on the % change in developed land. Detention basins wer estimated to have constructed at a rate of 20 per square mile, based on the new ordinance requirements.

The total countywide maintenance program costs were calculated by using a Drainage Maintenance Worksheet that computed the total costs based on Component Quantities, Component Maintenance Frequencies, Component Performance Standards, Labor Requirements and costs of the labor. These are estimated costs for maintenance across the county, without any designated split between SMC and the local jurisdictions.

This resulted in Total Costs for the maintenance program for each watershed (See the following pages for the Maintenance Worksheets).

The total annual cost for maintenance is $20.4 million for the total countywide stormwater management needs. Assume that approximately 10% of these needs are for interjurisdictional or trunk system components that will be the responsibility of SMC. The remaining maintenance needs must be addressed by local jurisdictions or may go unmet.

Action Plan:

Development of the maintenance program will further define costs and responsibilities. Assume an initial maintenance program of approximately $1 million in Year 5 and $2 million per year funded by SMC starting in year 6 which would be distributed to local jurisdictions or outsourced to accomplish the interjurisdictional and trunk system maintenance needs.

SMC will also seek additional funds that could sponsor local maintenance needs.

RESOURCES NEEDED TO PROVIDE/ PERFORM FUNCTION			Full Service Costs	Action Plan Costs
	TOTAL DIRECT COST	$	2,000,000	2,000,000 (years 5+)
	STAFF REQUIRED: FTE @ $90,000	$		
	TOTAL COST	**$**	**2,000,000**	**2,000,000 (years 5+)**

TYPE OF COST: ☒ ANNUAL (RECURRING) ☐ NON-RECURRING

Future Maintenance Cost Estimates

	Sub-Total Cost	Other Activities	Total Cost	FTE's
Des Plaines	$6,560,000	$656,000	$7,216,000	68
Fox River	$4,810,000	$481,000	$5,291,000	50
Lake Michigan	$3,100,000	$310,000	$3,410,000	32
North Branch	$3,750,000	$375,000	$4,125,000	39
Total County	$18,220,000	$1,822,000	$20,042,000	189

Lake County Stormwater Planning Committee
Des Plaines River Watershed
Future Projections

Drainage Maintenance Worksheet

Item No.	Maintenance Category	Units to be Maintained	Recommended Frequency	Performance Standard	Labor Requirements: Maint. Worker	Labor Requirements: Equip. Operator	Annual Man-Days: Maint. Worker	Annual Man-Days: Equip. Operator	Worker: $168/day	Operator: $215/day	Equip. & Mat'ls	Cost Totals	% of Program	Annual FTE Req.
1	Clean Catch Basins	9,161 EA	100 %/Yr.	40 EA/Day	2	1	458	229	$76,900	$49,200	$126,100	$252,200	3.8%	2.6
2	Clean Inlets & Sumps	15,933 EA	100 %/Yr.	20 EA/Day	2	2	1,593	1,593	$267,600	$342,500	$610,100	$1,220,200	18.6%	12.3
3	Maintain Det. Basins - Veg.	1,400 EA	100 %/Yr.	2 EA/Day	3	0	2,100	0	$352,800	$0	$352,800	$705,600	10.8%	8.1
4	Clean Det. Basins - Sed.	630 EA	10 %/Yr.	2 EA/Day	3	2	95	63	$16,000	$13,500	$29,500	$59,000	0.9%	0.6
5	Clean Outfalls	3,080 EA	100 %/Yr.	5 EA/Day	2	2	1,232	1,232	$207,000	$264,900	$471,900	$943,800	14.4%	9.5
6	Inspect/Check Pump Sta.	20 EA	1200 %/Yr.	3 EA/Day	2	0	157	0	$26,400	$0	$26,400	$52,800	0.8%	0.6
7	Maintain Pump Stations	20 EA	100 %/Yr.	1 EA/Day	2	1	39	20	$6,600	$4,300	$10,900	$21,800	0.3%	0.2
8	Roadside Ditches - Veg.	1,044,374 LF	100 %/Yr.	10,000 LF/Day	1	1	104	104	$17,500	$22,400	$39,900	$79,800	1.2%	0.8
9	Roadside Ditches - Reshape	495,647 LF	33 %/Yr.	2,000 LF/Day	2	2	164	164	$27,600	$35,300	$62,900	$125,800	1.9%	1.3
10	Open Channels - Veg.	295,261 LF	300 %/Yr.	3,000 LF/Day	1	1	295	295	$49,600	$63,400	$113,000	$226,000	3.4%	2.3
11	Open Channels - Reshape	446,240 LF	10 %/Yr.	1,500 LF/Day	3	2	89	59	$15,000	$12,700	$27,700	$55,400	0.8%	0.6
12	Clean/Flush Culverts (<18")	4,382 EA	50 %/Yr.	10 EA/Day	2	1	438	219	$73,600	$47,100	$120,700	$241,400	3.7%	2.5
13	Clean/Flush Culverts (18"+)	4,382 EA	50 %/Yr.	10 EA/Day	2	1	438	219	$73,600	$47,100	$120,700	$241,400	3.7%	2.5
14	Clean Pipe (<24")	4,319,535 LF	25 %/Yr.	2,500 LF/Day	2	1	864	432	$145,200	$92,900	$238,100	$476,200	7.3%	5.0
15	Clean Pipe (24"+)	1,092,019 LF	33 %/Yr.	1,500 LF/Day	2	1	480	240	$80,600	$51,600	$132,200	$264,400	4.0%	2.8
16	Inspection with TV	1,423,719 LF	10 %/Yr.	5,000 LF/Day	3	2	85	57	$14,300	$12,300	$26,600	$53,200	0.8%	0.5
17	Repair/Replace Catch Basin	565 EA	100 %/Yr.	2 EA/Day	3	3	848	848	$142,500	$182,300	$324,800	$649,600	9.9%	6.5
18	Repair/Replace Manholes	198 EA	100 %/Yr.	1 EA/Day	4	2	791	396	$132,900	$85,100	$218,000	$436,000	6.6%	4.6
19	Street Sweeping	39,833 LF	400 %/Yr.	60,000 LF/Day	1	1	3	3	$500	$600	$1,100	$2,200	0.0%	0.0
20	Non-Scheduled Maintenance		(+7.5% of Items 1-19)				770	463	$129,400	$99,500	$228,900	$457,800	7.0%	4.7
	Sub-Total: All Maintenance Categories						11,043	6,636	$1,860,000	$1,430,000	$3,280,000	$6,560,000	100.1%	68.0

Other Activities

Administration/Supervision	+	5.0%	$ 328,000
Emergency Response	+	2.5%	$ 164,000
Hazard Mitigation	+	2.5%	$ 164,000

Total: All Maintenance Categories $7,220,000

Lake County Stormwater Planning Committee
Fox River Watershed
Future Projections

Drainage Maintenance Worksheet

Item No.	Maintenance Category	Units to be Maintained	Recommended Frequency	Performance Standard	Labor Requirements: Maint. Worker	Labor Requirements: Equip. Operator	Annual Man-Days: Maint. Worker	Annual Man-Days: Equip. Operator	Worker: $168/day	Operator: $215/day	Equip. & Mat'ls	Cost Totals	% of Program	Annual FTE Req.
1	Clean Catch Basins	4,320 EA	100 %/Yr.	40 EA/Day	2	1	216	108	$36,300	$23,200	$59,500	$119,000	2.5%	1.2
2	Clean Inlets & Sumps	7,512 EA	100 %/Yr.	20 EA/Day	2	2	751	751	$126,200	$161,500	$287,700	$575,400	12.0%	5.8
3	Maintain Det. Basins - Veg.	1,600 EA	100 %/Yr.	2 EA/Day	3	0	2,400	0	$403,200	$0	$403,200	$806,400	16.8%	9.2
4	Clean Det. Basins - Sed.	720 EA	10 %/Yr.	2 EA/Day	3	2	108	72	$18,100	$15,500	$33,600	$67,200	1.4%	0.7
5	Clean Outfalls	3,520 EA	100 %/Yr.	5 EA/Day	2	2	1,408	1,408	$236,500	$302,700	$539,200	$1,078,400	22.4%	10.8
6	Inspect/Check Pump Sta.	7 EA	1200 %/Yr.	3 EA/Day	2	0	58	0	$9,700	$0	$9,700	$19,400	0.4%	0.2
7	Maintain Pump Stations	7 EA	100 %/Yr.	1 EA/Day	2	1	15	7	$2,500	$1,500	$4,000	$8,000	0.2%	0.1
8	Roadside Ditches - Veg.	1,168,590 LF	100 %/Yr.	10,000 LF/Day	1	1	117	117	$19,700	$25,200	$44,900	$89,800	1.9%	0.9
9	Roadside Ditches - Reshape	269,255 LF	33 %/Yr.	2,000 LF/Day	2	2	89	89	$15,000	$19,100	$34,100	$68,200	1.4%	0.7
10	Open Channels - Veg.	137,475 LF	300 %/Yr.	3,000 LF/Day	1	1	137	137	$23,000	$29,500	$52,500	$105,000	2.2%	1.1
11	Open Channels - Reshape	179,446 LF	10 %/Yr.	1,500 LF/Day	3	2	36	24	$6,000	$5,200	$11,200	$22,400	0.5%	0.2
12	Clean/Flush Culverts (<18")	5,430 EA	50 %/Yr.	10 EA/Day	2	1	543	272	$91,200	$58,500	$149,700	$299,400	6.2%	3.1
13	Clean/Flush Culverts (18"+)	5,430 EA	50 %/Yr.	10 EA/Day	2	1	543	272	$91,200	$58,500	$149,700	$299,400	6.2%	3.1
14	Clean Pipe (<24")	2,036,646 LF	25 %/Yr.	2,500 LF/Day	2	1	407	204	$68,400	$43,900	$112,300	$224,600	4.7%	2.4
15	Clean Pipe (24"+)	501,719 LF	33 %/Yr.	1,500 LF/Day	2	1	221	110	$37,100	$23,700	$60,800	$121,600	2.5%	1.3
16	Inspection with TV	671,278 LF	10 %/Yr.	5,000 LF/Day	3	2	40	27	$6,700	$5,800	$12,500	$25,000	0.5%	0.3
17	Repair/Replace Catch Basin	281 EA	100 %/Yr.	2 EA/Day	3	3	422	422	$70,900	$90,700	$161,600	$323,200	6.7%	3.2
18	Repair/Replace Manholes	98 EA	100 %/Yr.	1 EA/Day	4	2	394	197	$66,200	$42,400	$108,600	$217,200	4.5%	2.3
19	Street Sweeping	18,781 LF	400 %/Yr.	60,000 LF/Day	1	1	1	1	$200	$200	$400	$800	0.0%	0.0
20	Non-Scheduled Maintenance		(+7.5% of Items 1-19)				593	316	$99,600	$68,000	$167,600	$335,200	7.0%	3.5
	Sub-Total: All Maintenance Categories						8,499	4,534	$1,430,000	$980,000	$2,400,000	$4,810,000	100.0%	50.1

Other Activities

Administration/Supervision	+ 5.0%	$ 240,500
Emergency Response	+ 2.5%	$ 120,250
Hazard Mitigation	+ 2.5%	$ 120,250

Total: All Maintenance Categories $5,290,000

Lake County Stormwater Planning Committee
Lake Michigan Watershed
Future Projections

Drainage Maintenance Worksheet

Item No.	Maintenance Category	Units to be Maintained	Recommended Frequency	Performance Standard	Labor Requirements: Maint. Worker	Labor Requirements: Equip. Operator	Annual Man-Days: Maint. Worker	Annual Man-Days: Equip. Operator	Worker: $168/day	Operator: $215/day	Equip. & Mat'ls	Cost Totals	% of Program	Annual FTE Req.
1	Clean Catch Basins	5,566 EA	100 %/Yr.	40 EA/Day	2	1	278	139	$46,700	$29,900	$76,600	$153,200	4.9%	1.6
2	Clean Inlets & Sumps	9,679 EA	100 %/Yr.	20 EA/Day	2	2	968	968	$162,600	$208,100	$370,700	$741,400	23.9%	7.4
3	Maintain Det. Basins - Veg.	319 EA	100 %/Yr.	2 EA/Day	3	0	479	0	$80,500	$0	$80,500	$161,000	5.2%	1.8
4	Clean Det. Basins - Sed.	144 EA	10 %/Yr.	2 EA/Day	3	2	22	14	$3,700	$3,000	$6,700	$13,400	0.4%	0.1
5	Clean Outfalls	702 EA	100 %/Yr.	5 EA/Day	2	2	281	281	$47,200	$60,400	$107,600	$215,200	6.9%	2.2
6	Inspect/Check Pump Sta.	12 EA	1200 %/Yr.	3 EA/Day	2	0	95	0	$16,000	$0	$16,000	$32,000	1.0%	0.4
7	Maintain Pump Stations	12 EA	100 %/Yr.	1 EA/Day	2	1	24	12	$4,000	$2,600	$6,600	$13,200	0.4%	0.1
8	Roadside Ditches - Veg.	496,799 LF	100 %/Yr.	10,000 LF/Day	1	1	50	50	$8,400	$10,800	$19,200	$38,400	1.2%	0.4
9	Roadside Ditches - Reshape	302,756 LF	33 %/Yr.	2,000 LF/Day	2	2	100	100	$16,800	$21,500	$38,300	$76,600	2.5%	0.8
10	Open Channels - Veg.	98,547 LF	300 %/Yr.	3,000 LF/Day	1	1	99	99	$16,600	$21,300	$37,900	$75,800	2.4%	0.8
11	Open Channels - Reshape	265,132 LF	10 %/Yr.	1,500 LF/Day	3	2	53	35	$8,900	$7,500	$16,400	$32,800	1.1%	0.3
12	Clean/Flush Culverts (<18")	1,266 EA	50 %/Yr.	10 EA/Day	2	1	127	63	$21,300	$13,500	$34,800	$69,600	2.2%	0.7
13	Clean/Flush Culverts (18"+)	1,267 EA	50 %/Yr.	10 EA/Day	2	1	127	63	$21,300	$13,500	$34,800	$69,600	2.2%	0.7
14	Clean Pipe (<24")	2,624,117 LF	25 %/Yr.	2,500 LF/Day	2	1	525	262	$88,200	$56,300	$144,500	$289,000	9.3%	3.0
15	Clean Pipe (24"+)	709,342 LF	33 %/Yr.	1,500 LF/Day	2	1	312	156	$52,400	$33,500	$85,900	$171,800	5.5%	1.8
16	Inspection with TV	864,909 LF	10 %/Yr.	5,000 LF/Day	3	2	52	35	$8,700	$7,500	$16,200	$32,400	1.0%	0.3
17	Repair/Replace Catch Basin	362 EA	100 %/Yr.	2 EA/Day	3	3	543	543	$91,200	$116,700	$207,900	$415,800	13.4%	4.2
18	Repair/Replace Manholes	127 EA	100 %/Yr.	1 EA/Day	4	2	507	253	$85,200	$54,400	$139,600	$279,200	9.0%	2.9
19	Street Sweeping	24,199 LF	400 %/Yr.	60,000 LF/Day	1	1	2	2	$300	$400	$700	$1,400	0.0%	0.0
20	Non-Scheduled Maintenance		(+7.5% of Items 1-19)				348	231	$58,500	$49,600	$108,100	$216,200	7.0%	2.2
	Sub-Total: All Maintenance Categories						4,992	3,306	$840,000	$710,000	$1,550,000	$3,100,000	99.9%	31.9

Other Activities

Administration/Supervision	+ 5.0%	$ 155,000
Emergency Response	+ 2.5%	$ 77,500
Hazard Mitigation	+ 2.5%	$ 77,500

Total: All Maintenance Categories $3,410,000

Lake County Stormwater Planning Committee
North Branch Chicago River Watershed
Future Projections

Drainage Maintenance Worksheet

Item No.	Maintenance Category	Units to be Maintained	Recommended Frequency	Performance Standard	Labor Requirements: Maint. Worker	Labor Requirements: Equip. Operator	Annual Man-Days: Maint. Worker	Annual Man-Days: Equip. Operator	Worker: $168/day	Operator: $215/day	Equip. & Mat'ls	Cost Totals	% of Program	Annual FTE Req.
1	Clean Catch Basins	7,239 EA	100 %/Yr.	40 EA/Day	2	1	362	181	$60,800	$38,900	$99,700	$199,400	5.3%	2.1
2	Clean Inlets & Sumps	12,590 EA	100 %/Yr.	20 EA/Day	2	2	1,259	1,259	$211,500	$270,700	$482,200	$964,400	25.7%	9.7
3	Maintain Det. Basins - Veg.	367 EA	100 %/Yr.	2 EA/Day	3	0	551	0	$92,600	$0	$92,600	$185,200	4.9%	2.1
4	Clean Det. Basins - Sed.	165 EA	10 %/Yr.	2 EA/Day	3	2	25	17	$4,200	$3,700	$7,900	$15,800	0.4%	0.2
5	Clean Outfalls	807 EA	100 %/Yr.	5 EA/Day	2	2	323	323	$54,300	$69,400	$123,700	$247,400	6.6%	2.5
6	Inspect/Check Pump Sta.	15 EA	1200 %/Yr.	3 EA/Day	2	0	121	0	$20,300	$0	$20,300	$40,600	1.1%	0.5
7	Maintain Pump Stations	15 EA	100 %/Yr.	1 EA/Day	2	1	30	15	$5,000	$3,200	$8,200	$16,400	0.4%	0.2
8	Roadside Ditches - Veg.	375,378 LF	100 %/Yr.	10,000 LF/Day	1	1	38	38	$6,400	$8,200	$14,600	$29,200	0.8%	0.3
9	Roadside Ditches - Reshape	304,973 LF	33 %/Yr.	2,000 LF/Day	2	2	101	101	$17,000	$21,700	$38,700	$77,400	2.1%	0.8
10	Open Channels - Veg.	74,773 LF	300 %/Yr.	3,000 LF/Day	1	1	75	75	$12,600	$16,100	$28,700	$57,400	1.5%	0.6
11	Open Channels - Reshape	272,605 LF	10 %/Yr.	1,500 LF/Day	3	2	55	36	$9,200	$7,700	$16,900	$33,800	0.9%	0.4
12	Clean/Flush Culverts (<18")	927 EA	50 %/Yr.	10 EA/Day	2	1	93	46	$15,600	$9,900	$25,500	$51,000	1.4%	0.5
13	Clean/Flush Culverts (18"+)	927 EA	50 %/Yr.	10 EA/Day	2	1	93	46	$15,600	$9,900	$25,500	$51,000	1.4%	0.5
14	Clean Pipe (<24")	3,413,238 LF	25 %/Yr.	2,500 LF/Day	2	1	683	341	$114,700	$73,300	$188,000	$376,000	10.0%	3.9
15	Clean Pipe (24"+)	794,115 LF	33 %/Yr.	1,500 LF/Day	2	1	349	175	$58,600	$37,600	$96,200	$192,400	5.1%	2.0
16	Inspection with TV	1,125,003 LF	10 %/Yr.	5,000 LF/Day	3	2	68	45	$11,400	$9,700	$21,100	$42,200	1.1%	0.4
17	Repair/Replace Catch Basin	473 EA	100 %/Yr.	2 EA/Day	3	3	709	709	$119,100	$152,400	$271,500	$543,000	14.5%	5.5
18	Repair/Replace Manholes	165 EA	100 %/Yr.	1 EA/Day	4	2	662	331	$111,200	$71,200	$182,400	$364,800	9.7%	3.8
19	Street Sweeping	31,475 LF	400 %/Yr.	60,000 LF/Day	1	1	2	2	$300	$400	$700	$1,400	0.0%	0.0
20	Non-Scheduled Maintenance		(+7.5% of Items 1-19)				420	281	$70,500	$60,300	$130,800	$261,600	7.0%	2.7
	Sub-Total: All Maintenance Categories						6,019	4,021	$1,010,000	$860,000	$1,880,000	$3,750,000	100.0%	38.6

Other Activities

Administration/Supervision	+ 5.0%	$ 187,500
Emergency Response	+ 2.5%	$ 93,750
Hazard Mitigation	+ 2.5%	$ 93,750

Total: All Maintenance Categories $4,130,000

FUTURE LAKE COUNTY SMC PROGRAM COST ESTIMATE WORKSHEET

PROGRAM ELEMENT: 6.2.4 Flood Control Facility Operation

ISSUE/OBJECTIVE: Operation of major flood control facilities throughout the county

COST ESTIMATE APPROACH:

SMC does not currently operate any major flood control facilities in the county.

RESOURCES NEEDED TO PROVIDE/ PERFORM FUNCTION			Ultimate Program Costs	Action Plan Costs
	TOTAL DIRECT COST	$		
	STAFF REQUIRED: FTEs@ $90,000	$		
	TOTAL COST	**$**		

TYPE OF COST: ☒ ANNUAL (RECURRING) ☐ NON-RECURRING

FUTURE LAKE COUNTY SMC PROGRAM COST ESTIMATE WORKSHEET

PROGRAM ELEMENT: 7.1 Design

ISSUE/OBJECTIVE: Design of Capital Improvement Projects throughout Lake County

COST ESTIMATE APPROACH:

Design of capital improvement projects can be estimated from the total cost of anticipated capital improvement projects. Capital costs for flood damage reduction projects are estimated as a total of $125 million on Worksheet 7.3. High Priority capital improvement projects are estimated at $53.4 million. Water Quality Projects are estimated as a total of $20.4 million on Worksheet 7.3.

The full-service program design of capital improvement projects is estimated as $14.5 million, 10% of the total cost from Worksheet 7.3.

The design of capital improvement projects is estimated at $7.38 million, 10% of the total High Priority Cost and Water Quality cost.

Assume that the design is outsourced at a 75/25 Consultant and SMC split. SMC is responsible for $1.85 million in design and consultants are responsible for $5.54 million.

SMC also manages and reviews plans at a cost of 15%, or $1.1 million, of the total cost.

Action Plan:

Assume capital improvement projects are implemented over 10 year planning period. Therefore the design of capital improvements would also be distributed over a 10 year period. Given ultimate design costs of $7.38 million, this equates to $738,000 per year.

Design should start in year 2 and continue at 50% for two years after some watershed and project planning have been completed.

The consultant outsourcing will be $553,500 per year beginning in Year 4 with $276,000 in Years 2 and 3.

SMC design will be $184,500 (2.05 FTEs) per year beginning in Year 4 with $90,000 (1.0 FTE) in Years 2 and 3.

SMC administration will be $110,700 (1.23 FTEs) per year beginning in Year 2

RESOURCES NEEDED TO PROVIDE/ PERFORM FUNCTION			Full Service Costs	Action Plan Costs
	TOTAL DIRECT COST	$	10,905,000	276,000 (Year 2-3) 553,500 (Year 4+)
	STAFF REQUIRED: 3.28 FTE @ $90,000	$	5,816,000	200,700 (Year 2-3) 295,200 (Year 4+)
	TOTAL COST	**$**	**16,721,000**	**848,700**

TYPE OF COST: ☐ ANNUAL (RECURRING) ☒ NON-RECURRING

FUTURE LAKE COUNTY SMC PROGRAM COST ESTIMATE WORKSHEET

PROGRAM ELEMENT: 7.2 Construction Services

ISSUE/OBJECTIVE: Construction management of the various Capital Improvement Projects throughout Lake County

COST ESTIMATE APPROACH:

Construction management of capital improvement projects can be estimated from the total cost of anticipated capital improvement projects. Capital costs for improvement projects are estimated as a total of $125 million on Worksheet 7.3. High Priority capital improvement projects are estimated at $53.4 million. Water Quality Projects are estimated as a total of $20.4 million on Worksheet 7.3.

The cost of the full service program for construction management of capital improvement projects is estimated at $8.72 million, 6% of the total capital and water quality costs.

The construction management of capital improvement projects is estimated at $4.43 million, 6% of the total High Priority Cost and Water Quality cost.

Assume a 90/10 split between consultant outsourcing and SMC. Outsourcing is responsible for $3.99 million and SMC is responsible for $443,000.

Contract administration and staff review will require 5% of the construction management for a total of $221,000.

Action Plan:

Construction services will begin in Year 3 after some planning is complete.

Consultant outsourcing will be $398,700 per year beginning in Year 3.

SMC will be responsible for $44,300 (0.49 FTE) per year beginning in Year 3.

SMC administration and management will be $22,200 (0.25 FTE) per year beginning in Year 3

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RESOURCES NEEDED TO PROVIDE/ PERFORM FUNCTION			Full Service Costs	Action Plan Costs
	TOTAL DIRECT COST	$	3,987,000	398,700
	STAFF REQUIRED: 0.74 FTE @ $90,000	$	664,500	66,500
	TOTAL COST	**$**	**4,651,500**	**465,200**

TYPE OF COST: ☐ ANNUAL (RECURRING) ☒ NON-RECURRING

FUTURE LAKE COUNTY SMC PROGRAM COST ESTIMATE WORKSHEET

PROGRAM ELEMENT: 7.3 Construction

ISSUE/OBJECTIVE: Construction of the necessary Capital Improvement Projects, including Flood Damage Reduction, Water Quality and Acquisitions, as designated by SMC

COST ESTIMATE APPROACH:

FLOOD DAMAGE REDUCTION PROJECTS

These costs were based on information found the the Lake County Flood Hazard Mitigation Plan (FHMP), the SMC repetitive loss properties study and various ongoing or completed Capital Improvement Projects.

From these sources, Capital Improvement Projects for flood damage reduction were sorted into High Priority and Low Priority projects. The High Priority projects consisted of the costs found in the SMC repetitive loss study and the Hotspots as designated in the FHMP. The Low Priority projects consisted of the other various sites not listed as Hotspots in the FHMP.

High Priority project costs:

The projects in the repetitive loss study were divided into the following mitigation categories: Relocate, Elevate, Barrier, Basement Protection Berm, and Wet Floodproofing. The costs were determined by using the typical costs found in the FHMP. The repetitive loss study estimated a total cost for mitigation of repetitive loss properties to be $12.3 million.

A weighted average cost of the mitigation categories excluding the Relocation costs was computed from the repetitive loss properties. This cost was determined to be $20,000 per property and was used as the average cost for Various Floodproofing Measures in the Hotspots and Other Non-Hotspots calculations.

The projects in the Hotspots study were divided into Relocate and Various Floodproofing Measures in their respective watersheds. In the absence of more detailed information, the proportion of relocation versus other mitigation measures in the repetitive loss study was used to determine the number of Relocations in the Hotspots. An acquisition cost of $250,000 per property was used as the total cost for relocation, demolition and property transfer. This is based on $210,000 as the average market value of a repetitive loss property in Lake County and $40,000 as the average cost for demolition and property transfer. The Various Floodproofing Measures cost was based on the remaining number of projects using the $20,000 per property as described above. Using this approach, mitigation of floods for Hotspot structures is estimated to cost $41.1 million.

The total cost for mitigation of repetitive loss and hotspot flooding is $53.4 million.

Low Priority project costs:

The cost of the remaining projects in the Non-Hotspots category were calculated using the average $20,000 per property as described above and the minimum and maximum number of projects in this category. The number of building units that required some type of mitigation resulted from the ranges of units given the FHMP. Since no specific mitigation measures were given for these units, the average was used to obtain an average cost.

The averaged total cost is approximately $72 million for the Non-Hotspots.

The overall capital improvement costs range from $109 to $141 million, but the $53.4 million, which represents only the highest priority projects, is used for the future program costs.

WATER QUALITY PROJECTS

As part of project planning, SMC should develop a restoration and rehabilitation plan for the County. In the absence of this plan, potential water quality improvement projects were estimated as follows

IEPA conducts surface water monitoring to identify water quality and problem areas in Illinois. Rivers and lakes are rated as good, fair or poor based on physical, chemical and biological data. A "good" rating means a river or lake meets the needs of all designated uses. "Fair" means water quality has been impaired and the waterbody meets some, but not all, of its designated uses. A waterbody whtat is rated as "poor" has water quality that has been severly impaired and cannot support designated uses to any degree.

In Lake County, IEPA has identified 23 miles of poor quality rivers and 58 miles of fair quality rivers. There are 27 fair quality lakes and 4 poor quality lakes. Good quality rivers and lakes were not tabulated as there would be no known need for rehabilitative or restoration projects.

Various water quality problems were found to be responsible for the remainder of impaired rivers. It is estimated that 1 water quality project per every 2 miles of impaired river will be needed at a cost of $200,000 each. This equates to 40 projects for a total of $8 million.
It is also estimated that 2 water quality projects per impaired lake will be implemented at $200,000 each. These projects will have a total cost of $12.4 million.
Water Quality projects have a total cost of $20.4 million.

Action Plan:

SMC should address and complete the High Priority projects over a period of 10 years. This will start in year 3 after planning and design have been initiated. The projects will then be completed over the subsequent 10 years. The Non-Hotspot projects will not be included because they are considered a second priority and require further definition through planning work. The High Priority total of $53.4 million over ten years equates to $5.34 million per year (commencing at year 3). These funds would go toward contractor fees, or property acquisitions

The need for Water Quality projects must be balanced with need for flood damage reduction projects. For planning purposes, assume approximately 75/25 split between flood damage reduction and water quality projects. This equates to approximately $2.04 million per year for water quality. The actual split and projects will be determined annually based on need These projects will start in year 3 after some planning and design have been finished and will continue for ten years or until projects are complete.

Overall, Capital Improvement Projects yield an annual cost of $7.38 million per year. However, in year 3, the cost will be $3.69 million which will ramp up to the $7.38 million in year 4.

RESOURCES NEEDED TO PROVIDE/ PERFORM FUNCTION			Full Service Costs	Action Plan Costs
	TOTAL DIRECT COST	$	145,000,000 (all projects)	3,690,000 (Year 3) 7,380,000 (Year 4+)
	STAFF REQUIRED: FTE @ $90,000	$		
	TOTAL COST	**$**	**145,000,000 (all projects)**	**3,690,000 (Year 3)** **7,380,000 (Year 4+)**

TYPE OF COST: ☐ ANNUAL (RECURRING) ☒ NON-RECURRING

Capital Improvements Cost Estimates

Lake County SMC Repetitive Loss Study

Type of Mitigation	Cost/Unit	Number of Units	Total Cost	% of Units	Average Cost
Relocate	Various	38	$ 11,097,354	35.2%	$ 292,000
Elevate	$ 30,000	25	$ 750,000	23.1%	$ 30,000
Barrier	$ 12,500	27	$ 337,500	25.0%	$ 12,500
Basement Protection Berm	$ 12,500	2	$ 25,000	1.9%	$ 12,500
Wet Floodproof	$ 6,000	16	$ 96,000	14.8%	$ 6,000
				100.0%	

Totals:

	Number of Units	Total Cost
Repetitive Loss Study Totals	**108**	**$ 12,300,000**

Using the repetitive loss studay as a representative sample, the average cost for mitigation measures other than relocate is equal to $17,260. Use $20,000 for estimation of hotspot and non-hotspot flood mitigation measures

Capital Improvements Cost Estimates

Lake County Flood Hazard Mitigation Plan

Hotspot Flooding Areas

Overbank and Chronic Flooding

Watershed	Mitigation	Cost/Unit[1,2]	Number of Units	Total Cost	% of Units
Fox River	Relocate	$ 250,000	28	$ 7,000,000	35.0%
	Various Floodproofing Measures	$ 20,000	52	$ 1,040,000	65.0%
	Fox River Subtotals:		80	$ 8,040,000	100.0%
Des Plaines River	Relocate	$ 250,000	18	$ 4,500,000	34.6%
	Various Floodproofing Measures	$ 20,000	34	$ 680,000	65.4%
	Des Plaines River Subtotals:		52	$ 5,180,000	100.0%
North Branch Chicago River	Relocate	$ 250,000	5	$ 1,250,000	33.3%
	Various Floodproofing Measures	$ 20,000	10	$ 200,000	66.7%
	North Branch Chicago River Subtotals:		15	$ 1,450,000	100.0%
	Lake Michigan Subtotals:		0	$ -	-

Other Flooding (Depressional, Local, Sewer Backup, etc.)

Watershed	Mitigation	Cost/Unit[2]	Number of Units	Total Cost	% of Units
Fox River	Various Floodproofing Measures	$ 20,000	435	$ 8,700,000	32.9%
Des Plaines River	Various Floodproofing Measures	$ 20,000	252	$ 5,040,000	19.1%
Lake Michigan	Various Floodproofing Measures	$ 20,000	622	$12,440,000	47.0%
North Branch Chicago River	Various Floodproofing Measures	$ 20,000	13	$ 260,000	1.0%
	Other Flooding Subtotals:		1322	$26,440,000	100.0%

1. Relocate costs based on average market value of repetitive loss properties in Lake County plus demolition, relocation, and property transfer
2. Various floodproofing measures based on average weighted cost of Elevate, Barrier, Basement Protection Berm and Wet Floodproof from repetitive loss study

	Number of Units	Total Cost
Overall Hotspot Flooding Areas Totals:	**1469**	**$41,100,000**

Capital Improvements Cost Estimates

Lake County Flood Hazard Mitigation Plan

Non-Hotspot Flooding Areas

			Number of Units		Total Cost	
Watershed	**Mitigation**	**Cost/Unit[2]**	**Minimum**	**Maximum**	**Minimum**	**Maximum**
Fox River	Various Floodproofing Measures	$ 20,000	1737	2625	$34,740,000	$52,500,000
Des Plaines River	Various Floodproofing Measures	$ 20,000	523	744	$10,460,000	$14,880,000
Lake Michigan	Various Floodproofing Measures	$ 20,000	356	661	$ 7,120,000	$13,220,000
North Branch Chicago River	Various Floodproofing Measures	$ 20,000	184	341	$ 3,680,000	$ 6,820,000

1. Relocate costs based on average market value of repetitive loss properties in Lake County plus demolition, relocation, and property transfer
2. Various floodproofing measures based on average weighted cost of Elevate, Barrier, Basement Protection Berm and Wet Floodproof from repetitive loss study

	Number of Units		Total Cost	
	Minimum	**Maximum**	**Minimum**	**Maximum**
Overall Hotspot Flooding Areas Totals:	**2800**	**4371**	**$56,000,000**	**$87,400,000**

Appendix D
SMC Stormwater Management Funding Alternatives

1.0 Background

The scope and depth of the current stormwater management program encompasses a broad spectrum of services provided by SMC and other jurisdictional bodies. The basic elements, or functions, of the program include planning and engineering services, regulatory, public information, maintenance and capital improvements. The sum of the costs to perform these functions at the desired level of service is the total cost of the stormwater management program.

This section identifies and discusses funding options available to the county for providing stormwater management services. These options were also discussed in the 1990 Comprehensive Plan. Three principal mechanisms exist to fund major aspects of a stormwater management program, including 1) property tax revenues, 2) special assessment districts, and 3) a stormwater user fee program. In addition, a number of other sources of revenue are available to supplement these principal funding sources. Each of the three principal funding mechanisms is evaluated in terms of applicability for funding the identified stormwater management program for Lake County. It is important to note that the 1990 SMC Comprehensive Plan also evaluated a number of funding options and recommended a user fee as SMC's primary funding source.

2.0 Property Tax Revenues

Property tax revenues are produced by an established tax levy against the assessed valuation of the property in the county. Thus, the amount of revenue generated is based on the required tax levy and the total assessed value in the county. Property tax based revenue does not collect any revenue from tax-exempt property such as churches, schools, government and institutional facilities.

Funding a stormwater management program with property taxes offers the following advantages:

- Property-tax-based revenues are already the primary existing source of revenue for the county,
- Property taxes are tax deductible,
- A billing system is already established for property taxes, and
- There are typically only minimal new implementation and administration costs for itemizing stormwater management activities and costs.

Utilizing property tax funding of stormwater management costs also has several disadvantages. The first is that the tax cap precludes any significant increases in the tax levy without a voter referendum. The second is that there is no relationship between the amount of property tax paid, which is based on the assessed value of the parcel, and the contribution of the parcel to stormwater runoff (either the quantity or quality of stormwater runoff).

3.0 Special Assessment Districts and Special Service Areas

Illinois law permits the establishment of special assessment districts and special service areas to implement public improvements. This type of funding mechanism is often utilized for special use projects such as for potable water, sanitary sewage, stormwater, and road improvements.

A special assessment district is typically structured so that the benefiting properties within the district fund the capital costs of the project. Funding is secured through a special assessment against those property owners directly benefited by the improvements. Maintenance funding must be supplied from another source. Funds generated from the assessment within a special assessment district must be used to benefit that area. For example, if drainage facilities are to be constructed to benefit a particular drainage basin, the assessment charge must demonstrate a direct benefit to each parcel of property in the district. Each benefited parcel is assessed according to a measure of their relative benefit, which for most projects has been calculated using the front footage of the properties. However, special assessments have also been assessed based on the runoff contribution of the parcel. (As discussed later under stormwater user fees, runoff contribution as represented by impervious area is considered to be a more equitable way of apportioning drainage contributions and benefits.) Special assessment districts are established by the local corporate authority with court approval. There are specific requirements for creating a board of local improvements and conducting public hearings and a court hearing that ultimately determine the validity of each project. Theoretically, special assessment districts could be established for each of the four watersheds in Lake County. However, the validity and specific requirements of a special assessment district created on a watershed basis should be verified by the Lake County states attorney.

Special service area financing is very similar to the special assessment district except that the amount collected from each property owner is based upon the levy of a tax against the assessed value of the property. A special service area is created by the local corporate authority, but can be stopped by 51 percent of the electors in the proposed service area. Because it is a tax, special service area contributions are tax-deductible whereas special assessments are not. However, as previously discussed under the property tax funding approach, there is some inequity in using an *ad valorem* revenue base, because property value is not related to stormwater runoff volume or stormwater runoff quality. The special service area concept is somewhat of

a localized version of a countywide property tax based funding mechanism. Special service areas must be contiguous within one municipality. This limitation may preclude its use on countywide or watershed wide projects.

The general disadvantages of a special assessment district funding option are:

- Districts must be developed corresponding to watersheds as opposed to the entire county; which would require multiple districts to achieve county-wide coverage;
- Districts are not capable of generating required revenues for countywide activities. Revenues can only be used within the district from which they are generated; and
- Allocation of the costs and benefits of the improvement to each property is a complex and cumbersome exercise that must be conducted for each assessment district created.

The disadvantages with special service areas as a funding option for municipality-wide programs are:

- Special service areas do not generally work for funding stormwater management programs because of the limited scope of the service area and the limitations on use of generated funds;
- There is the apparent need to be contained within one municipality;
- Special service areas do not change tax exempt property;
- A petition of 51 percent of the property owners can stop the service area; and
- The inequity of collecting revenue based on assessed value instead of runoff contribution.

4.0 Stormwater Management User Fee

The establishment of stormwater management user fee programs as a funding option has achieved growing popularity in the United States since the mid 1970's. More than 300 cities and 16 counties across the United States have taken steps to implement stormwater management user fee programs. For example, user fee programs are now in operation in Denver, Colorado; Ann Arbor, Michigan; Fort Wayne, Indiana; Louisville, Kentucky; Tulsa, Oklahoma; Chesapeake, Virginia; Duluth, Minnesota; and Topeka, Kansas. Regional or countywide programs have been implemented in several metropolitan areas including in Dade County, Florida; Franklin County, Ohio; St. Louis County, Missouri; Fairfax County, Virginia; and Sarasota County, Florida. The Lake County Stormwater Management Plan as adopted in 1990, identified the user fee as the optimal primary funding source for SMC activities with the caveat that state statutes would need to be amended to enable this funding method.

A stormwater user fee funding approach involves charging *all* property owners a user fee for stormwater management services. The fee is typically assessed monthly or quarterly. The user fee is based on the contribution of stormwater runoff from each property to the drainage system (for example, ditches, sewers, and channels) and water quality control facilities. The user fee covers local and system-wide costs for program engineering and planning, O&M, public information, and capital improvements similar to the user fees for other public utilities like water and wastewater.

A stormwater user fee program is a more equitable funding mechanism than property tax revenue or special districts because fees assessed to each parcel of land are based on *usage* of the drainage system rather than property value. Because commercial and industrial properties generally generate much more runoff and stormwater pollution per square foot than single-family residential properties, these properties are charged a proportionally greater fee. A principal advantage associated with a stormwater user fee program is that tax-exempt properties (for example, federal, state, school, and other tax-exempt buildings and installations) can be assessed a user fee that reflects their relative stormwater contribution to the municipal drainage system. For example, each tax-exempt parcel would be charged a stormwater user fee that is proportional to the stormwater discharge from the property. This method is similar to the manner in which other public operations bill tax-exempt property based on usage (for example, electricity usage and water consumption).

The square footage of impervious ground cover (for example, rooftops, driveways, and parking lots) is typically used as the basis for the stormwater user fee because imperviousness is a common indicator of stormwater flow and pollution discharge potential. The average impervious area per dwelling unit (in square feet) for residential land use categories in typically designated as the base unit for the user fee structure. The base unit represents the stormwater discharge potential of the average residential dwelling and its associated lot. It can be based on all residential development (including multi-family) or on single-family residential development only. The average impervious area of the base unit is calculated by summing the impervious area (in square feet) of a scientific sampling of all residential parcels and dividing by the total number of dwelling units.

A user fee program typically charges a flat fee to each residential dwelling unit and charges a non-residential parcel based on the ratio of the parcel's impervious area to that of the base unit. For example, if a commercial or industrial parcel has four times the impervious area of the base unit, the parcel would be billed four times the monthly flat fee for residential dwelling units.

Advantages of a stormwater user fee program include the following:

- Dedicated funding source;
- An equitable fee that is based on runoff contribution rather than property value;

- A mechanism to charge all properties, including tax-exempt property, for stormwater management services;
- The potential to administer the stormwater user fee through other billing systems (existing or expanded); and
- A stable funding source that is adequate for all stormwater management activities to allow long-range planning, large-scale capital improvements, and leverage for bond issues and grants.

Disadvantages of a stormwater user fee program include the following:

- A need for parcel-by-parcel information, which results in additional implementation costs;
- The need to establish a new or expanded billing system; and,
- The possibility that a new fee may not be well received by the public.

Many counties and municipalities have used a combination of property tax revenues with a stormwater user fee to bridge the transition from property tax funding to full user-fee-based funding of a stormwater management program. The period of this transition typically varies from 1 to 5 years. The advantage of this approach is that maintaining a partial property tax contribution for stormwater management while initiating a user-fee-based system greatly improves the ability to address problems in a comprehensive and immediate manner. In addition, the perceived cost impact on property owners is usually somewhat less if partial property tax support is maintained, because the stormwater user fee is less during the transition period.

5.0 Other Revenue Sources

A number of other revenue sources exist to fund, in part, a countywide stormwater management program. However, these other sources are typically small in magnitude or have limited application.

Typical sources of supplemental revenue include the following:

- Local or county option sales tax;
- Permit and license fees;
- Penalties and fines;
- Homeowner association assessments;
- Development and redevelopment contributions;

- Subdivision exactions;
- Fee-in lieu-of charges;
- Tap-on, or connection, fees;
- Betterment charges;
- Impact fees; and
- State and federal grants.

6.0 Comparison of Funding Alternatives

Only the property tax and user fee funding alternatives address all aspects of a comprehensive stormwater management program on a countywide scale, as shown in Table D-1. The stormwater user fee program is considered the most equitable means of funding a comprehensive stormwater management program because the costs are allocated based on the relative stormwater impacts caused by a property. The correlation between the amount of impervious area and the relative quantity and quality of stormwater runoff allows a user fee program to equitably allocate stormwater management costs. In addition, a user fee program provides a mechanism to provide a stable revenue source that can be used to implement a comprehensive program.

As shown in Table D-1, special assessment districts provide an equitable allocation of costs, but do not have countywide applicability and can only be used for capital costs. Special service areas also have limited area applicability and are based on property value.

Sales taxes and gasoline taxes can generate substantial revenue, but are often reserved for other county needs such as roads and major infrastructure improvements. Sales and gasoline taxes are highly controversial issues that are extremely difficult to implement at the political level. Recent efforts by Lake County to secure a gas tax were unsuccessful.

Table D-1: Lake County Stormwater Management Funding Method Comparison Matrix

Funding Method	County-Wide Applicability	Equitable Allocation of Costs	Used for Capital Costs	Used for O&M Costs	Used for Engineering Costs	Reliable Funding Source
Stormwater User Fee	T	T	T	T	T	T
Property Tax	T		T	T	T	
Special Assessment Districts		T	T			T
Special Service Areas			T			T
Local Sales Tax	T		T	T	T	
Gasoline Tax	T		T	T	T	
Permit Fees		T			T	
Penalties and Fines		T				
Homeowner Associations		T	T	T		
Subdivision Exactions		T	T			
Fee-In-Lieu-Of Charges		T	T			
Tap-On Fees		T	T	T	T	
Betterment Charges			T			
Impact Fees		T	T		T	
Grants	T		T		T	

Homeowner associations can only be used to finance local maintenance and capital improvements. Subdivision exactions and fee-in-lieu-of charges are important components of a comprehensive stormwater management program. However, because these mechanisms are typically restricted to construction costs for new developments, they cannot be a major financing tool for an expanded stormwater management program. Subdivision exactions and fee-in-lieu-of payments cannot be used to correct existing drainage or water quality problems or to fund ongoing operations and maintenance activities. Tap-on fees provide a source of revenue, but only to recover funds already spent by a municipality. Permits and fines are intended to cover only the cost of administration and enforcement. Both are inappropriate and insufficient to fund either capital improvements or O&M programs.

Impact fees are collected from a developer or property owner to pay for services or improvements that directly benefit a project or development. Typically established by ordinance, impact fees must be legally defensible and are not negotiable. A common misconception regarding impact fees is that they can be collected uniformly from developments and redevelopments to recover or offset the general costs of a municipality=s stormwater management program. This approach, however, does not result in a fair and equitable allocation of costs because only future developments contribute. Impact fees are only defensible when charged to offset costs of specific stormwater management services directly attributable to the property being charged the fee.

Grants are available as a funding source for certain unique projects or applications that are a component of the stormwater management program. However, grants are only available as a supplemental source of revenue for these unique applications and almost always require a local match.

7.0 Funding Alternative Summary

In summary, this section has summarized the benefits and disadvantages associated with different funding options for stormwater management programs. User Fees allow the establishment of a continuous, reliable and adequate funding source based on a fair and equitable allocation of costs in the stormwater management program. The user fee alternative was identified in SMC's primary guidance document, the 1990 Lake County Comprehensive Stormwater Management Plan.